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# Railway Age

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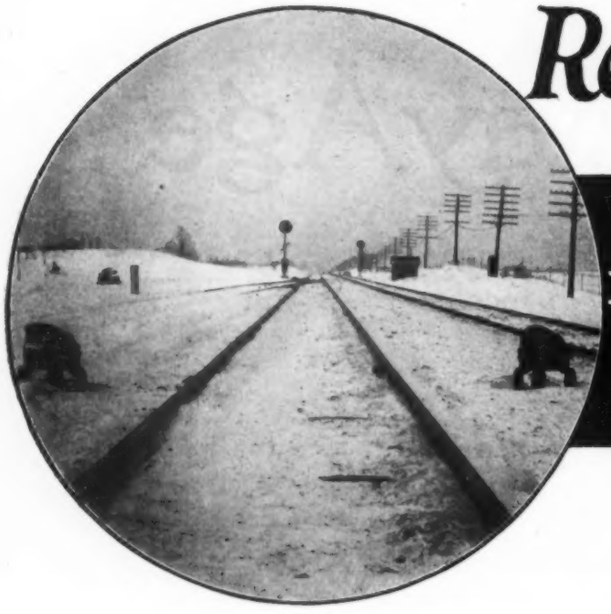
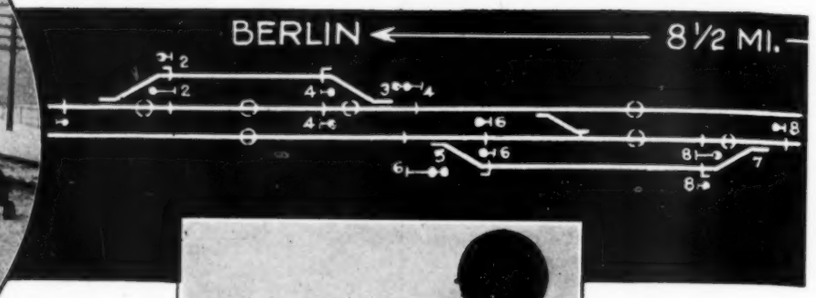
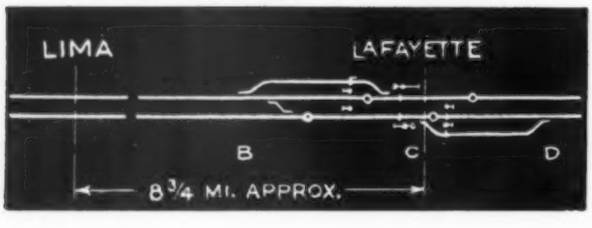
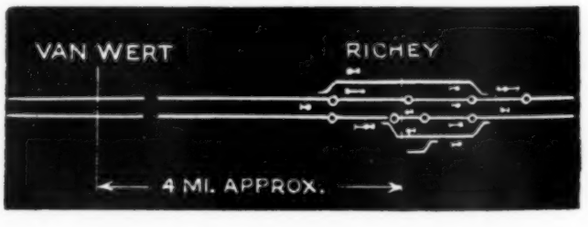
# Removing Operating





THE heavy traffic between New York and Chicago on the Pennsylvania Railroad makes it necessary to utilize to the fullest extent the passing sidings, and the facilities which are offered by all outlying locations. From Berlin to Vandale there are 8-½ miles of double track with four passing sidings and a cross-over; in the 8-¾ road miles from Lima to Lafayette are two passing sidings and a cross-over, at Richey are two passing sidings and a spur.

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Railway Age

Vol. 88, No. 9 March 1, 1930
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# The Hearings on "Reciprocal Buying"

THE testimony introduced in recent hearings before the Federal Trade Commission on the complaint made by the commission charging certain officers of Swift & Company, the packers, and the Mechanical Manufacturing Company, with unfair competition, has thrown much light on the subject of "reciprocal buying".

It has shown how little real reciprocity there may be in "reciprocal buying". Swift & Company give the railways a large amount of traffic, and have a right to demand, and undoubtedly do demand, that the railways shall reciprocate by giving Swift & Company good service at reasonable rates. Swift & Company apparently own no interest in the Mechanical Manufacturing Company. Its ownership is controlled by officers of Swift & Company and members of the Swift family, and it is engaged in the manufacture of supplies for sale to railroads. Complete reciprocity between the Mechanical Manufacturing Company and the railways would consist in the sale by this company to the railways of supplies of as good quality in proportion to the prices charged for them as those offered to the railways by other manufacturers competing for railroad business with the Mechanical Manufacturing Company. Reciprocity does not require any railway to buy supplies from the Mechanical Manufacturing Company because the railway is given traffic by Swift & Company. Nevertheless, the testimony introduced shows conclusively that traffic officers of Swift & Company urged and even demanded that railways should buy supplies from the Mechanical Manufacturing Company, because of traffic given them by Swift & Company.

## *Quality and Price—or Traffic?*

The demands made were both large and importunate. One railway was asked for 25 per cent of the orders it intended to place for draft gear with which to equip certain freight cars it was intending to buy. Another railway was told that it was hoped to get one-third of the orders placed by the carriers for draft gear in future. The Mechanical Manufacturing Company had only recently engaged in making draft gear, while there were already several companies in the field that had been engaged on a large scale for years in making draft gear. The American Railway Association has considered the draft gear problem of the railways of sufficient seriousness and importance to have extensive studies and tests of draft gear made under its supervision and at its expense. The confidence shown in the power of traffic by a company which was making a new draft gear, and which asked for 25 or 30 per cent of the entire business, is highly significant. Obviously, if its hopes had proved well-founded, competing manufacturers representing much less traffic would have suffered from a very substantial reduction of their business.

It always has been conceded by those who have defended so-called "reciprocal buying" that traffic should be considered in the making of railway purchases only if the concern offering the largest traffic could show that the device it was trying to sell was on a parity, in point of quality and price, with competing devices. Fortunately the questions of quality and price were raised in the hearings before the Federal Trade Commission by those against whom the charge of unfair competition has been made. The experts of the railways on the questions of quality and price are their mechanical and purchasing officers, and various mechanical and purchasing officers were questioned regarding these matters. The information elicited showed clearly that a large majority of the mechanical and purchasing officers questioned had not recommended the purchase of the draft gear made by the Mechanical Manufacturing Company because they believed it was a better draft gear in proportion to the price charged for it than competing devices made by other companies. The conclusion seems to follow that the traffic of Swift & Company was the most potent influence that enabled the draft gear to secure a comparatively large market in a very short time. Will anybody who heard or reads the testimony and who is familiar with railway methods believe that any independent manufacturer who had not had the backing of a large amount of traffic would have been able, in the same length of time, to have made such large sales to the railroads of this new draft gear at the price asked for it? If not, what becomes of the claim that traffic is considered only when other things are equal?

There was a time when it was assumed that the traffic officers of a company shipping a large amount of freight were employed only to get good railway serv-

ice at reasonable rates for their company. If a traffic officer of Swift & Company should write a letter to a railway officer saying that the railway was not giving good freight service, and that if it did not improve its service traffic would be withdrawn from it, it does not seem probable that an attorney representing this traffic officer would object to the letter being introduced as evidence in a public hearing. The attorney who represented officers of Swift & Company and the Mechanical Manufacturing Company in this hearing did, however, repeatedly object to the introduction of letters written by traffic officers of Swift & Company to railway officers calling their attention to the desirability of making purchases from the Mechanical Manufacturing Company. If the practice of officers of companies shipping a large amount of freight in using their traffic to influence railway purchases is a fair and sound business practice, why should those who use it object to evidence regarding its use being introduced in public hearings? Surely no harm can be done by the greatest possible publicity being given to fair and sound business practices.

### *Tendencies of "Reciprocal Buying"*

The testimony introduced in these hearings tends to support practically every criticism the *Railway Age* ever has made of so-called "reciprocal buying" and its tendencies and effects. It illustrates that there is no real reciprocity in "reciprocal buying"; that it gives concerns representing a large amount of traffic a great advantage in competing for railroad business over concerns that do not represent a large amount of traffic; that it tends to cause quality and price to be largely disregarded in railroad buying, and thereby to increase railway operating expenses; and that, by tending to cause quality to be subordinated to traffic considerations, it tends to hinder progress in the railway equipment and supply manufacturing industry and in the railroad industry.

The respondents in this case have had the misfortune to be the first to have their "reciprocal buying" practices developed in public hearings. They are, however, by no means the only companies and persons whose use of similar practices will be shown if the results of other investigations being conducted are made public. The extent to which the hearings have shown that some railways have yielded to the pressure for so-called "reciprocal buying" is disquieting, unless the view is to be accepted that it is an entirely sound practice for traffic to be given much more weight in making purchases than even the defenders of "reciprocal buying" have claimed in the past.

The railways always have used their purchases more or less to influence traffic, and manufacturers always have used their traffic more or less to influence railway purchases. Whether the use of particular methods to get business constitute harmless business practices, or an abuse, depends upon the extent to which and the way in which they are employed, and their actual and potential effects. That so-called "reciprocal buying" is growing to an extent, is being used in ways, and is producing effects that make it an abuse, can hardly be denied by any person familiar with the facts.

How can the situation be remedied? No reasonable effort should be spared to prevent attempts from being made to remedy it by legislation. The first remedy that should be applied is that of publicity, and it is now being applied. Railway executives should take action to make certain that quality, price and delivery, and not traffic, are in future given paramount consideration in making purchases. The heads of large industrial and commercial concerns should recognize the danger in present tendencies, and impose reasonable restrictions upon the use of their traffic as means of influencing railway purchases.

Either the use of traffic to influence railway purchases will diminish or it will increase. It has recently been increasing. Railway executives and big shippers will determine whether it will diminish or continue to increase. If it continues to increase and to take new forms, as it has within recent years, the consequences inevitably will be serious for both the railroads and other large business concerns that are responsible for it.

## New Freight Speed Records

OPERATING statistics for the full year 1929, just compiled, reveal new peaks in the railways' accomplishments in increasing speed of their freight service and in reducing time in transit. Special significance in this regard attaches to the figures of average daily car mileage and of average train miles per train hour.

Miles per car per day, including surplus and bad order as well as loaded cars, averaged 32.4 in 1929, an increase of 1.2 miles over the corresponding average in 1928, and of 8.9 miles or 38 per cent, over the average attained in 1922, the year before the executives' improvement program was adopted. This 1929 figure is the highest annual mark ever reached.

Likewise, average miles per hour for trains in freight service were greater in 1929 than in any previous year. The 1929 figure of 13.2 shows an increase of 2.1 miles per hour, or 19 per cent, over the 1922 average.

While these figures reveal a striking story of increased operating efficiency, their meaning may perhaps be better grasped generally by some more common measure. At the average train speed of 1922, a freight train would have covered 266 miles in 24 hours; at the average speed attained in 1929, this train would have covered 317 miles in 24 hours, an increased movement of 51 miles in a day.

Shifting from increased distance covered in a given time to reduced time required for travel between terminals, the figures show that an average 100-mile trip, including time for switching at intermediate terminals, setting out cars, etc., required 9 hours and 1 minute in 1922 and 7 hours and 35 minutes in 1929. This is a

saving of 1 hour and 26 minutes, on the average, for every hundred miles run by freight trains or an average time reduction, in general, of 16 per cent. Since the return of the railways to private operation in 1920, this reduction in road time has averaged 22 per cent.

Since it has been estimated that the value of freight moving on the railways currently amounts to some two billion dollars and totals approximately seventy billion dollars in a year, this reduction of almost one-quarter in average transit time between terminals, together with the marked improvement in terminal handling, has resulted in a very material saving in interest charges to shippers.

## Passenger Car Color Schemes

THE psychological effect of color is much more real and important than commonly appreciated, thus explaining why some homes, like some passenger cars, are more cheerful and inviting than others. These are the homes and the cars in which people like best to go and stay longest. Color is the first means of attracting the eye and is the real secret of beautiful rooms, being even more important than the style and arrangement of furniture. The opinion may be confidently expressed that few railroads are so fortunate as to have a staff officer or anyone else in their regular employ competent to pass on the exact color combinations which will produce the desired results when used in decorating passenger car interiors.

Colors are no longer simply "blue" or "grey," but they may be "warm", "cold" or "cool" depending upon the particular shades selected. Some color combinations are suitable for equipment operated in warm climates, some in cold climates, and others may fit average conditions. It would seem logical, therefore, when a railroad is in the market for passenger cars, particularly if the expenditure is running into several million dollars, that a competent interior decorator with a knowledge of modern, scientific and artistic color selection be called into consultation. That this practice is not always followed is evidenced by a recent case in which a large amount of equipment was involved. Sample cars were fitted up embodying the ideas of mechanical department and other interested officers, but admittedly being more or less of a "hodge podge." The decision regarding the interior decoration of this equipment was finally left to the wife of one of the officers, who unquestionably had more taste than her spouse but no special training in interior decoration.

Railroads place the design of locomotives, cars, machinery, etc., in experienced hands and those roads which have adopted a similar policy in regard to the interior decoration of passenger cars, find that it pays, as demonstrated by the public favor accorded several of the beautifully-equipped and decorated passenger trains recently placed in service.

## More Cattle Moved by Truck

THE railways are losing a steadily increasing amount of live stock traffic to the motor truck. According to the Corn Belt Farm Dailies, a group of daily newspapers of the live stock trade published at Chicago, Omaha, Neb., Kansas City, Mo., and St. Louis, 23 per cent of the total receipts of live stock at 17 markets in 1929 came by motor truck. At these markets a total of 14,510,524 cattle, calves, hogs and sheep arrived by truck, an increase of 19 per cent over the receipts by that means of transportation during 1928. The number of head of cattle received by truck has nearly trebled since 1925, when 5,378,868 head of cattle were unloaded from motor trucks at these markets. The total tonnage of live stock shipped by truck to the 17 markets during 1929 is estimated at 2,000,000 tons, and the total value is placed at $410,000,000. It is estimated further that this live stock, if shipped by railway, would have aggregated 232,000 single-deck carloads.

Those who attended the meeting of the Motor Transport Division at St. Louis, Mo., last year, will recall the trip of inspection made to the National Stock Yards at East St. Louis, Ill., where there was ample visual as well as statistical evidence of the popularity among shippers of the motor truck as a means of transportation of live stock to market. Stockyards originally designed to handle live stock coming in by rail have been forced to rearrange their facilities in order to accommodate the increasing inbound traffic by motor truck. Certain of the advantages of truck transportation of live stock over short distances—speed, flexibility, reduced shrinkage, etc.—probably cannot be offered by railways under existing operating methods. The volume of live stock traffic, however, and the obvious tendency of a substantial and growing part of it to desert the railways seems to call for an effort to devise a way of handling these shipments, perhaps by co-ordinated rail and highway movement, which would win them back.

## Copies of Consolidation Map Still Obtainable

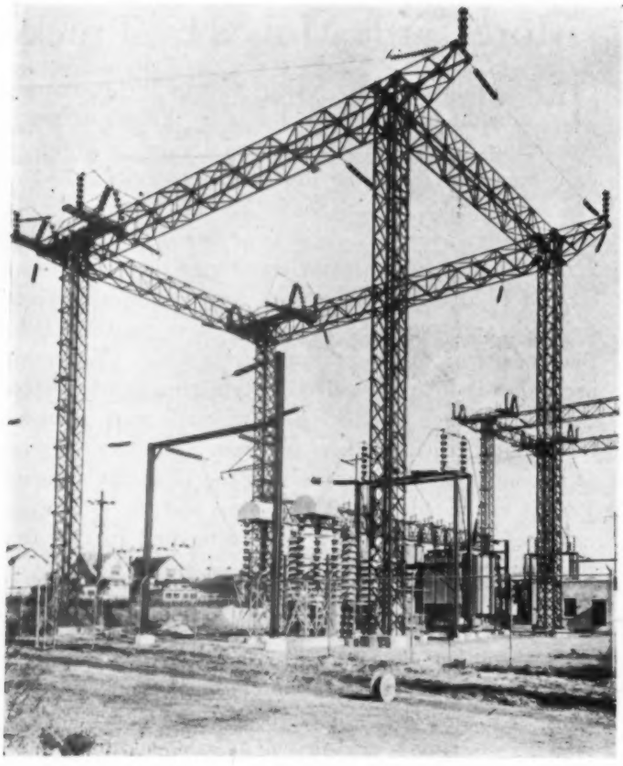
ADDITIONAL copies of the large wall map published with the *Railway Age* of January 25 showing, drawn to the same scale, each of the railway systems proposed under the Interstate Commerce Commission's consolidation plan will be obtainable for a limited time. Foreseeing a large demand for the issue containing this map, the *Railway Age* had several hundred extra copies printed. The demand for this issue has been continuous and heavy and the supply of extra copies is now nearing exhaustion. As long as it lasts, however, this issue containing the map may be obtained at the regular price of 25 cents per copy by application to the *Railway Age*, 30 Church street, New York.

# Electrification of R

## *Operation of existing electrified lines and a study of changing railroad requirements indicate future of electric traction*

By F. H. Shepard

Director of Heavy Traction, Westinghouse Electric & Manufacturing Company



*A Pennsylvania Traction-Power Substation*

ALTHOUGH my subject deals with the future, a brief review of the past history of electrification in America may be of use in clearing our outlook.

The original installation of electric power for main line haulage, placed under contract in 1891, began operation in the Baltimore & Ohio tunnel in Baltimore, Md., in 1895, and it was just 35 years ago that the author was connected with this project. The working conductor for this pioneer installation was fabricated from rolled Z-bars supported from porcelain insulators and by a rod catenary from trusses in the open outside the tunnel. The voltage was 650 d.c. with maximum current up to 4000 amperes; and the original locomotives maintained continuous service for about 25 years.

During and subsequent to this installation, the third or contact rail came into use with direct current at the nominal voltage of 550, which voltage was used universally on the electric surface lines in the cities and for interurban electric service which was then coming into vogue. The adoption of the third rail was followed by the elevated roads, later the subways, then terminal and suburban services, such as that of the Long Island, Pennsylvania and New York Central railroads.

The first use of overhead contact with high voltage in America was on the New York, New Haven & Hartford in 1907, with much controversy over the comparative merits of the third rail versus the overhead conductors.

Subsequently, for interurban services, 1200 volts, then 1500 volts direct current, came into the picture. The Butte, Anaconda & Pacific followed in 1913 at 2400 volts, then the Chicago, Milwaukee & St. Paul at 3000 volts in 1915—all with overhead contact wire.

Just prior to this time the Norfolk & Western commenced operation on the Elkhorn grade early in 1915 with electric locomotives, two of which took the place of three Mallet steam locomotives but at twice the speed. This heavy operation was accomplished at 11,000 volts, 25 cycles, similar to the New York, New Haven & Hartford, but with motors of the induction type for constant speed operation through phase conversion on the locomotives. In 1925 the Virginian Railway followed, using a similar installation but with trains of 6,000 and 9,000 trailing tons.

In 1914, after two years of analysis, the Pennsylvania Railroad adopted the single-phase system and commenced its first operation at Philadelphia.

The Great Northern electrified the original Cascade tunnel in 1909 with the three-phase overhead system, but this was replaced by single-phase in 1927, and this has since been extended to cover the new Cascade tunnel and the mountain section between Skykomish, Wash., and Wenatchee, Wash. This is also at 11,000 volts, 25 cycles, with motor-generator type locomotives.

There have been other tunnels, such as the Hoosac on the Boston & Maine, and the St. Clair on the Grand Trunk, both using single phase, and the Michigan Central at Detroit, Mich., using 600 volts third rail. The Cleveland Terminal & Tunnel Improvement is now being installed with overhead contact at 3000 volts d.c.

### Multiple Unit System

In 1898 a noteworthy development—the multiple-unit system invented by Frank J. Sprague—came into use on the South Side elevated road in Chicago and it was also my lot to be connected with this pioneer development. This multiple-unit system has since prevailed for all elevated, subway and rapid transit services. The facility with which train make-up and terminal operation can thereby be secured, together with the advantage of rapid acceleration, are the factors of such material value in electrification that they may, in fact, be governing in order to obtain increased capacity at existing terminals and improved operation for suburban service.

Electric operation with the multiple-unit system of the suburban service of the Illinois Central began in 1926 with the overhead system at 1500 volts d.c. This was a terminal improvement and suburban electrification which incidentally had been under discussion more or less continuously since 1891.

This same character of operation is now being installed for the suburban service of the Lackawanna Railroad from Hoboken, using overhead contact of 3000 volts d.c.

# f Railroads in Prospect*

**Overhead Construction Used on Cleveland Union Terminals Development Near the Terminal Showing Space to be Used by Rapid Transit Lines**

There had been other suburban installations, such as the Southern Pacific at Oakland, Cal., using overhead conductors at 1200 volts d.c., the West Jersey & Seashore using 600 volts third rail and the Staten Island Railroad with third rail and equipment of the New York subway type.

Altogether there were on January 1, 1930, 23 installations on 18 railroads, aggregating nearly 1700 miles of main line and 4000 miles of track, operating nearly 600 locomotives and over 2000 multiple unit cars.

It should be noted that electrification thus far in America had been generally adopted to improve conditions of operation at passenger terminals or in tunnels, the exceptions being the Norfolk & Western and the Virginian railways where increases in capacity over existing tracks was the objective. Also the Chicago, Milwaukee & St. Paul, an extensive operation in the west, and the Butte, Anaconda & Pacific where the availability of hydro-electric power was the dominating factor.

Without exception, every instance of electric operation has been a marked success. The service accomplished has, in every case, been superior to the steam operation replaced and the dependability realized has likewise been distinctly bettered.

### Electric Traction Abroad

Following the operation in the Baltimore tunnel, electric operation was undertaken abroad. Extensive programs have been effected or are under way in Germany, Switzerland, Italy, France and Sweden, as well as important suburban operation in England centering at London, in Australia at Melbourne and Sidney; also complete electrification of sections of railroads in South Africa, Chile, Brazil, Japan, Java and elsewhere.

Today, there is electric operation outside of the United States on railroads in 22 countries, aggregating over 6500 miles of route, approximately 3000 locomotive units and over 5000 multiple unit cars. The methods used in electrification differ widely throughout the world.

The controlling reason for most of the electrification outside of America has been due either to the entire lack of coal, to the relative scarcity of coal, or to its exchange value, the savings being realized by the use of hydro-electric power, or those from more economically generated steam power, especially where low-grade fuel was available. Exceptions are obviously the terminal and suburban operations in England and in Australia.

Here in America, with our relatively low cost and abundant resources of fuel, until very recently railroad electrification has been distinctly lagging, compared to the rest of the world where extension has been rapid, especially since the war.

This review indicates that the reasons for electrification heretofore in America have been generally to satisfy or meet particular requirements more or less localized as to time and conditions.

It will have to be admitted that there has been no extensive undertaking for all services, up to now, which can be classed as a complete, comprehensive electrification.

### Traffic Requirements

Coming now to the consideration of future and more extensive electrification here in America, conclusions based on reference to the growth and trend of steam operation should govern as to the requirements and hence will determine the kind and type of electrification. While railroad electrification is only a tool for moving traffic, it may be said to be the best tool and as such, possesses many direct and collateral advantages

* Paper presented before the New York Railroad Club, February 21, 1930.

Of major importance is the ease and flexibility with which electric motive power may be assigned and may be operated.

Comparable with our other highways, rail routes may be of major importance and rail traffic seeks those most advantageously situated. About 10 per cent of the route miles in America carry some 50 per cent of the traffic, while perhaps 50 per cent of the route miles carry 90 per cent of all of the traffic which moves.

Growth of steam railway operations in America has been prodigious. At present 440 billion ton-miles compares to 100 billion ton-miles of only 30 years ago. The growth in efficiency of rail movement is scarcely less startling. For the last 20 years, there has been practically no increase in the number of freight train miles or in the number of locomotives. In other words, our train units are becoming progressively heavier and it is doubtful if the end is in sight. Furthermore, trains are moved at higher speeds, the increase in ton-miles per hour having been nearly 50 per cent in less than 10 years. The size of the steam locomotive has likewise grown, the average tractive power having progressively increased. The trend is conclusively toward more and more horse power per train.

There has been a serious reduction in the movement of passengers since the advent of the automobile and the hard surface highways. However, there has been a pronounced increase of through passengers traveling over long distances and between our populous centers. It seems unlikely that there will ever come a time when the automobile, or even the airplane, will be an important factor affecting the volume of this kind of movement. In fact, it may be assumed that the automobile and the airplane may be a stimulus to travel by rail. We are, as a nation, becoming more travel-minded and more speed-minded. The trend does, therefore, indicate that traffic in the future, both passenger and freight, will be served by longer, heavier and faster trains.

### Electricity Versus Steam

While the growth of the steam locomotive has been conspicuous and noteworthy, so also has its complication and cost. The electric locomotive meanwhile has been undergoing development. It may be admitted that the field for electrification in the future will be essentially for those services which can be accomplished by it better than by its steam competitor.

It should be noted that the efficiency of present railroad operation has been a remarkable achievement and that the increase in freedom of movement and the consequent lack of congestion realized on the railroads today have been promoted by the ordered and efficient manner in which traffic has latterly been handled. Most freight trains today run on schedules and with certainty comparable to those of passenger trains of some years ago. The value of this improvement to industry and to agriculture, as well, has been no doubt the largest factor in our present and recent widespread activities.

Of one thing we are certain—the United States has grown and developed through rail transportation and the growth of population and industry in the United States will continue to develop a demand for increased rail transportation. This will be between and to our industrial and populous centers. Existing lines will at some time be called upon to carry double the existing volume of traffic and, in the not distant future, a still further increase. Our great distances, coupled with the progressive increase in the scale of living, which are largely the reasons for the present 4000 ton-miles per capita compared to some 10 or 20 per cent of this in other industrialized nations, would seem definitely to assure this conclusion.

This view is, of course, for the future and is perhaps more optimistic than that indicated by the present stationary revenues of some railroads. However, it should be recognized that the traffic map has been undergoing radical change since the war so that present conditions should be regarded as transitional. The relative lesser movement of coal compared to other commodities demonstrates this position.

### Looking to the Future

Electrification of the future will, therefore, be with equipment to secure a vast increase in capacity and in speed of movement. In considering the relative cost and advantage of services, the consumption of power becomes distinctly minor as a factor. Who thinks today of the relative power required for good or better illumination, or for good or better subway operation, or for good or better machine tool output? The cost of fuel on the railroads is today, after all, only some 7 per cent of the total revenue.

The general production and consumption of electricity has doubled in five years and quadrupled in ten years, and the cost of production has been steadily downward.

Considering now the immediate future, there is under way an electrification of most overwhelming importance and magnitude—that of the Pennsylvania Railroad. This may be taken to be the first comprehensive example of a truly extensive electrification that has yet been undertaken. The line of road to be completely electrified is between New York and Washington and westward to the vicinity of Harrisburg, and will include electrification of all services—passenger, freight and switching. The passenger service will be cared for by multiple-unit trains for suburban service, high-speed express passenger locomotives for through-passenger service and for freight service with locomotives of the most powerful type. Freight trains will be consolidated and run at higher speeds, thus opening up the railroad for additional growth in traffic.

### Development of Equipment

The development of equipment for this important service is a noteworthy accomplishment. Passenger locomotives will have two driving axles and three driving axles, the units being capable of coupling as may be desired to suit any weight of train. The continuous horsepower rating of the twin motors will approximate 1400 h.p. per axle, with characteristics and capacity to sustain continuously this horsepower rating at speeds up to and exceeding 90 m.p.h. One half of a twin motor will form the driving unit for a freight axle, which will be assembled in units of four driving axles. The number of coupled units forming a locomotive for freight service will be limited only by the strength of the car equipment and, for the present, will be limited to three units, with an aggregate approaching 8400 continuous horsepower, capable, however, of developing for short duration 12,000 h.p. Likewise, the passenger units may develop a maximum of 2000 h.p. per driving axle for use as required for short duration.

The operation which equipment of this type will permit in traffic movement of the future will enormously increase the capacity of the electrified tracks. Like-

wise, the improvement in efficiency and effectiveness of operation will be greatly enhanced, even when capacity is not the limiting factor.

The single-phase motor on which these locomotives are predicated, has recently been developed and will shortly be in initial operation. Production is also authorized and under way for similar units of common interchangeable standard to be made by the two principal electrical manufacturers. This may be taken as an outstanding milestone in the progress of electrification. These motors are of the series commutator type with transformer tap control of voltage and will, therefore, be able to meet their most severe schedules, irrespective of voltage drop and regulation on the trolley and feeder system. They will run on an underground circuit which, together with their satisfactory characteristics and detail design, will bring motor maintenance to a minimum.

Of significant importance has been the decision of the Reading Company, now installing its initial suburban electrification with single-phase centering at Philadelphia. This contemplates future operation of magnitude and will be of a standard permitting interchange with the Pennsylvania Railroad.

It is recognized that electrification as a major improvement is costly but for the conditions of the future, involving both growth and change in service requirements, and as the best tool for utilizing the existing tracks and facilities, and to establish the highest class of service, it cannot and will not be surpassed.

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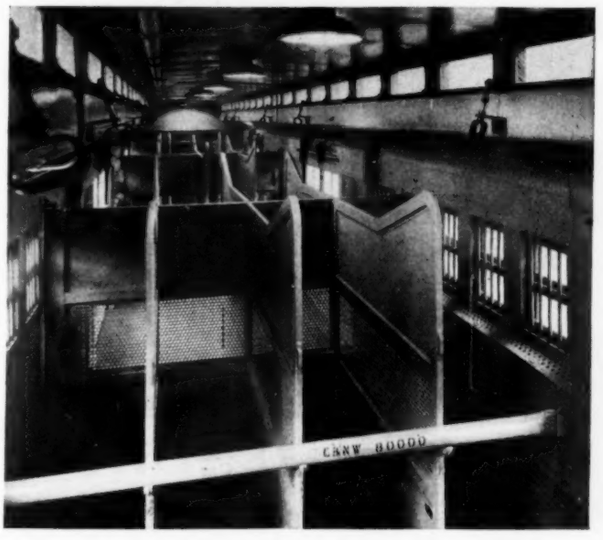
AN INDIRECT REDUCTION in passenger fares has been made on the Kenya & Uganda Railways, Africa by the introduction of a system of discounts on tickets bought by staffs of business concerns shipping over the railways. These discounts range from 10 per cent on eight one-way or round-trip tickets bought by members of firms paying freight bills of 20,000 shillings annually to a discount of 65 per cent on 10 tickets bought by members of firms paying 300,000 shillings or more annually in freight charges.

# North Western Receives Five Horse-Express Cars

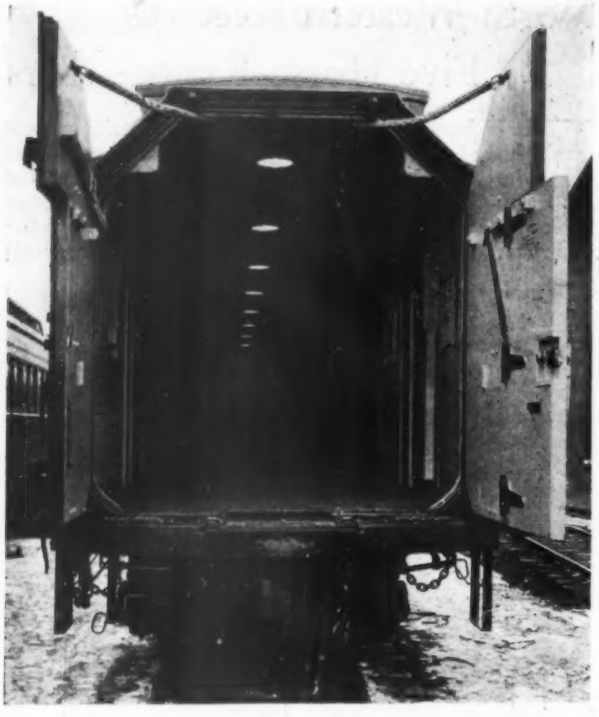
FIVE horse-express cars, in which special efforts have been made to perfect ventilation and lighting and develop a thoroughly modern car for this traffic, have been placed in service by the Chicago & North Western. The all-steel cars, built by the American Car & Foundry Co., are 74 ft. 2¼ in. long



**Horse-Express Car with Partitions Set Up to Form 24 Individual Stalls**

and 8 ft. wide, and weigh 143,000 lb. There are 28 windows located four feet from the floor and designed to slide up and down instead of swinging in or out. Additional air circulation is accomplished by 44 window

**Horse-Express Car with Partitions Stored in One End for Commercial Shipping—The Gate Partition Can Also Be Swung Out of the Way, If Desired**



**The End Door Construction of Chicago & North Western Horse-Express Car**

ventilators in the deck of the car. The interior walls are constructed so as to be free from protruding bars, chains or lights, the latter being recessed.

The partitions used to form the stalls can be removed and stored in one end of the car while the breast bars are stored in covered recesses in the side of the car. When the car is set up for shipping horses in individual stalls as many as 24 horses can be accommodated in stalls seven feet long and three feet wide. When used for commercial shipping without the individual stalls, two large partition gates can be swung out from the side of the car to form three large sections that will contain 32 horses.

The floor is made of Blox-on-End flooring. The cars are electrically lighted, the overhead fixtures being close to the ceiling. Heat is provided by the Vapor steam system, and all steam pipes are covered by a perforated metal sheet which forms the side of the car.

There are three sets of side entrances on the car, two near the ends, four feet in width, and one set at the middle, seven feet in width, making a total of six side entrances. One end of the car is so constructed that the entire end swings open, thereby facilitating loading when automobiles, scenery or other commodities are being shipped. It is possible to load the horses, automobiles and other equipment from a platform through the end of the car. The construction of this end of the car includes a steel end door frame which is cast in one piece and which supports the roof end, sides and doors.

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A NEW CLASSIFICATION YARD recently completed by the Swiss Federal Railways at Mottenzerfeld, near Basle, has been equipped throughout with electric car retarders, operated from a single control tower. The yard, situated so as to classify trains from German and French points for Swiss or foreign destinations, is 2¼ miles long and nearly 500 yards wide. Its 31 tracks total 25 miles in length, while its daily capacity is between 1,800 and 2,000 cars.

# Funds Allowed For Recapture Campaign

WASHINGTON, D. C.

THE Senate appropriations committee on February 24, in reporting the independent offices appropriation bill, restored the increase of $1,007,313 in the Interstate Commerce Commission's appropriation for valuation work, intended to enable it to prosecute a vigorous campaign for the recapture of excess earnings, which had been disallowed by the House committee on the ground that the commission had adopted a changed procedure and that the item had not had adequate consideration by the Budget bureau. This would increase the amount for valuation work to $3,547,313, of which $2,980,646 is for salaries of 1,050 persons, and the total appropriation for the commission from $8,322,650 as provided in the bill as it passed the House, to $9,325,963.

### Testimony of Commissioner Lewis

Commissioner Lewis appeared before the committee on February 19 and explained that he had told the Budget bureau that it had been hoped that the recapture valuations could be carried on to a considerable extent by "short-cut methods," and what he called "administrative procedure as distinguished from trial procedure," referring to the conference method. However, the commission at that time had not entirely decided on its method of procedure and, "in the light of the decision of the Supreme Court in the O'Fallon case, and the attitude of many carriers, has come to the conclusion by almost a unanimous vote that we shall proceed, at all events for a time, under what we will call ordinary trial procedure." "We will issue reports," he said, "on which there can be protests, as in the tentative valuations in the past. That will result in hearings before the commission, the preparation of testimony and the issuance of final recapture reports; and this is all fraught with a great deal of legal controversy."

After the item was cut out of the House bill, he explained, a hearing was held before the Budget bureau, and the President had recommended a reinstatement of the original amount in the bill to be considered by the Senate.

Commissioner Lewis told the Senate committee of a list of 161 roads on which it is proposed, by June 30, 1931, to issue recapture reports and that the commission figured there were about 400 "recapture roads." In reply to a question as to whether it would cost $1,000,000 for that work he said: "It is not only going to take $1,000,000 but it is going to take many millions of dollars to cope with this situation. I have an estimate which I am loath to put into the record. Inasmuch as the point has been raised, however, I will say that we estimate that there is outstanding as a minimum, something like $150,000,000 subject to recapture and it might be more than that. Now whenever you take money away from railroads you have to proceed with adequate preparation, and that costs a tremendous amount of money. The records of the carriers have to be checked, not only on the valuation of the property but also on the way they have kept their accounts. In some instances in which we have made that check the accounts are probably 15 per cent off. And, further than that, we are almost ten years behind time on this work right now."

*Looking Over the East Half of the Erecting Shop Showing the 200-Ton and 15-Ton Cranes in the Background*

# Canadian National Builds Large Shop at Montreal

*New locomotive repair unit covering 6.36 acres incorporates many unique features of construction, arrangement and operation*

EARLY last year the Canadian National completed and put in operation at Montreal, Que., Can., the largest and most up-to-date locomotive repair shop in the Dominion, and one which rivals anything of its kind in the United States. The new shop, which is located at Point St. Charles, is not only expansive, having a floor area of 277,100 sq. ft., but is unusual in that it houses under one roof a complete locomotive maintenance and repair unit, including an erecting shop, a heavy machine shop, a light machine shop, a boiler shop, a tender shop, a truck shop, a spring shop, a forge shop, and numerous auxiliary shop areas.

All of the various units of the shop are located with specific relation to each other, with the view of expediting repair work, and each individual unit is completely fitted with modern equipment and machine tools. Eleven electrically-operated overhead traveling cranes, together with 3 traveling jib cranes (electrically driven), with a total lifting capacity of 477 tons, serve the various units, in addition to 81 stationary jib cranes of one and two-tons capacity. The new shop, which was completed and put in operation on July 16, 1929, replaces locomotive repair facilities at Point St. Charles, constructed in 1857, which, in recent years, have been inadequate to handle effectively the repair of the heavier power which has been placed in service.

In addition to the new shop, a new power house has been constructed at Point St. Charles, which replaces two old boiler plants, and supplies all of the steam required for power and heating in both the new locomotive shop and the existing car repair shops. One of the most interesting features of the new power house, which is modern in every detail, is the boiler arrangement and auxiliary equipment provided for burning pulverized fuel.

### Shop is Well Constructed and Laid Out

The new shop and power house are two of the important units completed in a large and comprehensive terminal development plan mapped out by the Canadian National for Point St. Charles. These two new facilities are typical of what can be expected in the remaining facilities to be constructed, the next of which will undoubtedly be a car shop, which is expected to have a floor area approximately twice that of the new locomotive repair unit.

The locomotive shop, which lies in a general east and west direction, is a steel-frame structure, with exterior walls of red plastic brick above a five-foot base course of concrete. The entire structure is carried on Raymond cast-in-place concrete piles, piles being necessary as the building site is close to the St. Lawrence river and only a few feet above its normal water level.

The shop is rectangular in shape, and is 1,056 ft. long by 265 ft. 4 in. wide. The building is divided longitudinally into four main bays, separated only by longitudinal rows of steel roof-supporting columns; in addition, there is a wide, closed-in transverse bay across the west end.

Beginning at the south side of the building, the first bay, which is 55 ft. 6 in. wide, is designed as a miscellaneous bay and provides space for a spring shop, a brake and spring gear repair shop, a tube shop, an air brake shop, a jacket and tin shop, a pipe shop, a woodworking shop, a light plate shop, and an area for repairing feedwater heater equipment and superheaters. In addition, this bay also includes a riveting tower.

The next longitudinal bay to the north of the miscellaneous bay is 85 ft. wide and contains the erecting shop, and a space 216 ft. long at the east end which forms the main boiler shop. The next bay to the north is 70 ft. wide and is known as the heavy machine bay, with the exception of 264 ft. at the east end, which is laid out as a tender tank and frame shop. The next, or most northerly bay is 54 ft. 10 in. wide, and except for 264 ft. at its east end, is used as a light machine bay. The area at the east end of this bay is assigned to tender and engine truck repairs.

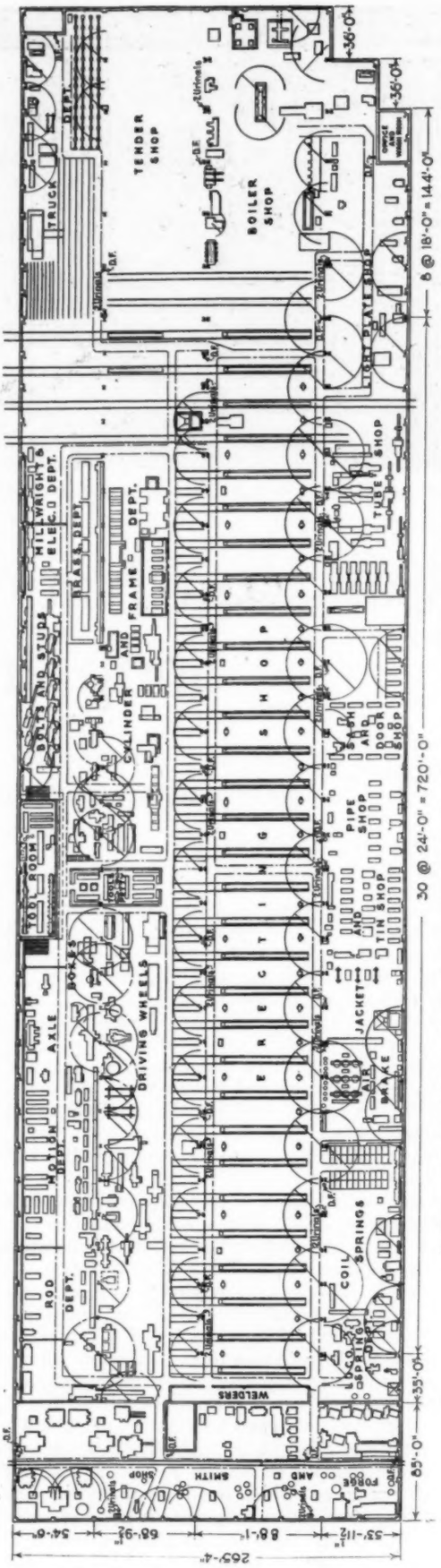
The roof over the shop is of the flat type with a row of skylights through the center of each bay, with the exception of that portion over the erecting bay, which rises in a monitor or clerestory with glazed sash along both sides. The roof deck is of mill type construction, covered by Johns-Manville asbestos built-up roofing, and is carried on structural steel roof trusses. The most unusual feature of the roof construction is the fact that all of the timber used was treated with zinc chloride before framing, to prolong its life and to make it fire-resistant. All roof drainage is carried down alongside columns inside the building to storm sewers.

### Adequate Lighting and Heating Are Assured

One of the most noticeable features of the shop construction is the large amount of glass provided to insure adequate daylighting. In all, about 45,000 sq. ft. in the side walls, or about 39.5 per cent of the entire wall area is of glass. In addition, there is 22,200 sq. ft. of glass in the sides of the clerestory over the erecting shop, and a total of 51,810 sq. ft. of glass in the sky-lights. All of the sash in the building are of steel construction, furnished by the Truscon Steel Company, $\frac{3}{16}$ in. rough cast glass being used in the side wall sash, while the skylights are glazed with Georgian wire glass, which is said to resist cracking in spite of uneven temperature or sudden temperature changes. The proper diffusion of daylight within the shop is provided mainly by the roughcast character of the glass used, but is greatly assisted by the fact that the entire inside surface of the solid walls, together with the interior steelwork and the underside of the roof, are painted with aluminum paint down to within five feet of the floor. Below this point the walls and steelwork are painted black.

Overhead artificial lighting is used throughout the shop, employing Holophane reflectors which are suspended from the roof trusses at heights level with the lower chords of the trusses. Each fixture is coupled to the wiring circuit by a plug connection to facilitate its removal for cleaning and lamp replacement, and all of the fixtures are easily accessible from the tops of the electric traveling cranes serving the building. The lamps used in the ceiling lighting units are of either 750 or 500-watt capacity, and the lights are suitably spaced to produce the desired illuminating effect. In order to permit sectional lighting, all of the ceiling lights are controlled in groups of six from cabinets conveniently located on the building columns.

In addition to the general lighting, all of the heavy machine tools and a large proportion of the smaller




A General Layout Plan of the Locomotive Shop Showing the Arrangement of the Various Departments

machines in the shop are provided with either bracket lighting fixtures or extension cords, and each of the pits in the erecting shop is equipped with five plug receptacles, three at the back end and two at the front end, controlled from cabinets on the building columns.

Of equal importance to the lighting of the shop is the natural ventilation which has been provided. Fresh air is admitted around all sides of the shop through bottom-hinged sash low in the side walls, and accumulated gasses, smoke and steam are carried off through an ample number of ventilators mounted on the skylights and the roof deck. Natural ventilation is greatly assisted by the high roof over the building, which varies from a minimum height of 41 ft. to a maximum height of 64 ft. in the clerestory.

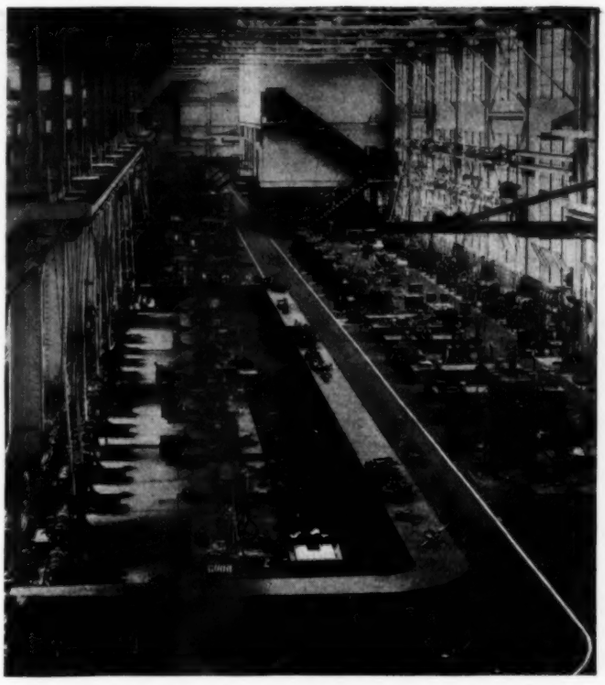
Heating of the building is accomplished by indirect steam heat, in a system which includes a total of 81 high-ceiling-type unit heaters. Each of these units is supplied with exhaust steam at five pounds pressure, and is operated by a two-horsepower motor. About 50 per cent of the heaters are thermostatically controlled, the remainder having manual control so that they can be cut into service as required to maintain a shop temperature of 65 deg.

All of the heaters are supported by the roof trusses and discharge the heated air at levels just above their lower chords. In the erecting bay, therefore, the warm air is discharged at a point more than 56 ft. above the floor, while in the remainder of the building the heated air is discharged at an elevation of about 35 ft. above the floor. The force of the discharge has been carefully gaged to produce a uniform temperature at the floor level without creating drafts.

## Floors and Foundations

For the most part, the floors throughout the shop are of creosoted wood blocks laid on a reinforced concrete base. The main exceptions to this are in the forge shop, which has a cinder floor with concrete trucking ways, and the spring and tank shops, which have concrete floors. Other exceptions are in the boiler shop, where a small area of cinder floor is provided around the flange furnace and the presses where hot plates are handled, and in the tube shop, where concrete is used around the tube cleaning machines because of the dampness which prevails around these machines.

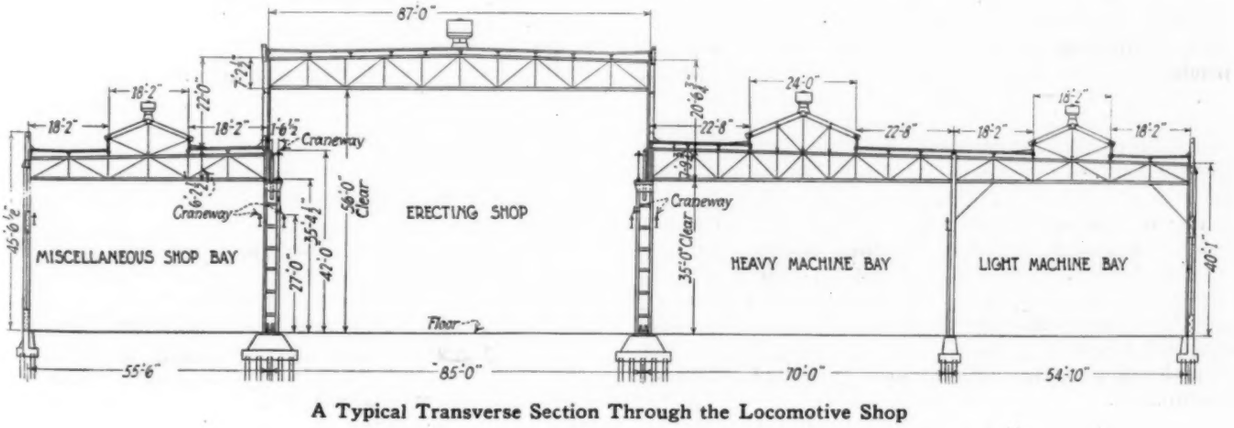
All of the machine tools in the shop rest on concrete, the foundations being of a widely varying character to suit the different types and weights of machines. The foundations for the larger units requiring anchor bolts, pits, etc., were poured in advance of the concrete subfloor. No special foundations were provided for the lighter machines, the subfloor being thickened under these machines by extending the concrete of the subfloor up to the normal floor level. Regardless of the type of flooring, the trucking aisles provided were laid out to permit convenient trucking service to all parts of the shop. Where these aisles would not be clearly discernible in themselves, they are outlined on the floor by white painted lines. Outside the building, and entirely surrounding it at a distance of 17 ft. from the walls, is a 20-ft. concrete roadway, which is connected to all of the outside doorways of the shop and with the main stores building and the city streets.



**Looking West Through a Section of the Light Machine Bay**

## Erecting Shop Has 31 Pits

Limitations imposed by the building site, and the necessity of maintaining the old shop in operation during the construction of the new shop, practically made it necessary to assemble the complete new locomotive shop facilities in a single building, an arrangement somewhat unique in locomotive shop design. Appearing entirely feasible, however, the main consideration given attention was to so locate and equip the various units that




**A Typical Transverse Section Through the Locomotive Shop**

Looking East Over the Various Units in the Miscellaneous Shop Bay

locomotive parts could be delivered to the subdepartments, repaired and returned to the erecting shop with the greatest of speed, and then reassembled on the locomotives in a minimum of time and with a minimum of manual effort. As a result of studies made, the erecting shop was located as near the center of the building as possible and was surrounded by the various subdepartments, so located as to reduce the handling and haulage of parts to a minimum.

The erecting shop, which lies under the clerestory of the roof, is 659 ft. long by 85 ft. wide, and has a clear height of 56 ft. to the lower chords of the roof trusses. This unit is equipped with 31 transverse locomotive pits, spaced 24 ft. center to center. In addition, there are four tracks adjoining the more easterly pit, which extend from yard connections outside the shop, two of which are used for stripping operations on incoming locomotives, and the other two for finishing up outgoing locomotives. All of the locomotive pits are of reinforced concrete construction, 60 ft. long by 4 ft. 1 in. wide. They are 2 ft. 4 in. deep at their south ends and 3 ft. deep at their north ends, and are equipped with drainage connections. Each pit is provided with five compressed air and five electric outlets, three of each being located at the back end, and the remaining two at the front end.

All of the handling of locomotives, and practically all of the handling of parts in the erecting shop is done by cranes. The main crane serving this unit is an overhead electric traveling-type crane of 200-tons' capacity, with a span of 81 ft. 11 in. and a space of 21 ft. 6 in. between its main bridge girders, making it possible to lift locomotives to a maximum height. This crane serves the full length of the erecting shop and handles locomotives to and from the incoming and outgoing tracks over other locomotives or the pits, and also over all other cranes serving the erecting shop except a 40-ton crane of the same type, on the same runway.

The design of the 200-ton traveling crane is rather unique in that it is supplied with a ten-ton auxiliary hoisting trolley, operating on the main bridge between the two main trolleys. This arrangement is proving a decided improvement over the usual system of adding auxiliary hoists on the main trolleys where they are out of action during the lifting, wheeling or unwheeling of locomotives.

Other cranes serving the erecting shop include the 40-ton travelling crane referred to above, which serves principally the boiler shop at the east end of the building; two 15-ton messenger cranes with spans of 79 ft. 3 in., and with lower runways also extending into the boiler shop; and a series of 1-ton, 26-ft. jib cranes installed at alternate columns along the south side of the erecting bay, at the front ends of the pits, which are used principally for front end work.

Other equipment in the erecting shop includes special trestles and platforms to facilitate the work on and about locomotives; machine vises and power grinders along both the front and rear ends of the pits; and gas welding outfits at alternate columns along both sides of the bay, each column so equipped being fitted with a light swinging jib, eight feet above the floor, to carry the oxygen and acetylene hose over the trucking aisles. The equipment also includes a system for making hydrostatic tests of boilers, and when necessary, locomotives can be charged with steam up to 160 lb. for removal from the shop under their own power.

### Machine Bays Are Well Equipped

The machine shop is divided into heavy and light machine bays, and is located north of the erecting shop. The heavy machine bay lies immediately adjacent to the erecting shop and is 659 ft. long by 70 ft. wide, with a clear height of 35 ft. to the roof trusses. The light machine bay is 659 ft. long by 54 ft. 10 in. wide, and is likewise 35 ft. high to the roof trusses. Both bays are served by cranes, the heavy machine bay by two 15-ton traveling bridge cranes, and the light machine bay by three one-ton traveling wall-bracket cranes. In addition, a large number of hand-operated cranes are located about the heavy machine bay for handling work to and from machines.

The machine shop is organized into ten subdepartments, with the machinery grouped accordingly in order to make possible the most intensive supervision. These various subdepartments include one for making new frames and cylinders; one for handling work on pistons, crossheads, guide bars and cylinder covers; another for renewals and repair work on driving wheels, axle bolts and crank pins, a miscellaneous machine group; a main side-rod group; a bolt and stud group; a brasswork group; a tool room and store; a millwright department; and a department for the inspection and repair of all motion parts and piston valves.

Driving wheels and engine truck storage is provided in the heavy machine shop by the extension of the erecting shop pit tracks into this bay, and also by the provision of short-length storage tracks in the heavy machine bay, located midway between the pit tracks. This trackage in the machine shop is used not only for wheel and truck storage, but as the point where axle boxes are fitted and applied to the wheels, this being aided by the jib cranes provided at alternate building columns. When the work on wheels and trucks is completed, they are held on the extensions of the pit tracks, ready to be rolled forward into the erecting shops and under the proper locomotive, without the necessity of handling them by a crane.

The machines and tools provided in the machine shop are of the most modern types and were selected and located with the idea of promoting the greatest speed and economy in carrying out the shop work. They include not only certain of the newer tools from the old shop, but numerous new units of equipment, some of which were specially designed by the Canadian National to meet its requirements.

Where possible, all machines in the shop are arranged for individual motor drive, power being delivered by two independent feeders, one carrying 220-volt d.c. current, and the other, 550-volt, 3-phase, 60-cycle, a.c. current. The main feeders are carried from the switchboard in the new power house nearby to the shop in underground tile conduit, and are continued under the shop floor throughout the length of the building, with numerous take-offs leading to groups of service switches.

On the side of the erecting shop opposite the heavy and light machine bays is another long bay, along the south side of the building, where a wide variety of miscellaneous shop work is carried out. This bay is 791 ft. long by 55 ft. 6 in. wide and is served throughout its length by a 15-ton overhead traveling crane. The main units in this bay include a spring shop, a brake and spring group, an air brake shop, a jacket and tin shop, a woodworking shop, a pipe shop, a tube shop, a light plate shop, and a section for the inspection and repair of superheaters, throttles, etc.

### Boiler, Tender and Truck Shops

The boiler shop occupies the south-east corner of the building, opposite the east ends of the erecting shop and miscellaneous shop bays. The main section of the boiler shop lies in line with the erecting shop and is 216 ft. long by 85 ft. wide. This section is served by the 40-ton crane which serves the erecting shop, thus making it possible to move boilers from the erecting pits to the boiler shop and vice-versa. It is also served by the two 15-ton traveling cranes operated throughout the erecting shop, and in addition, is equipped with several small-capacity jib cranes for handling parts.

The boiler shop is provided with two tracks, without pits, for placing boilers requiring heavy firebox work where it is not desired to detach the boilers from the frames and cylinders. It is equipped with machinery of sufficient capacity to perform all of the necessary machining and flanging operations required in constructing or repairing a complete modern locomotive boiler.

The more southerly part of the boiler shop, where work of a lighter character is carried on, is a continuation of the miscellaneous machine bay along the south side of the building and occupies a space 144-ft. long. This part of the boiler shop is served by the 15-ton traveling crane which operates throughout the miscellaneous machinery bay. A riveting tower, 36 ft. by 33 ft., and 80 ft. high, is located in the south-east corner of this section of the boiler shop, and is equipped with a 25-ton crane and a 12-ft. hydraulic gap riveter for boiler barrel and heavy tank work.

Tender frame and tank repairs are made in the tender shop, which occupies a space 264 ft. long by 70 ft. wide adjacent to the boiler shop and immediately at the east end of the heavy machine bay. This unit has a capacity of 14 tenders. It is served by a 40-ton overhead traveling crane, and has a clear height of 35 ft., which makes it possible to move the largest types of tender tanks over one another.

In order to facilitate the testing of repaired tanks with water in this shop, seven four-inch water cranes have been installed at the building columns, each crane serving two tanks. The test water is pumped to the water cranes by an electrically-operated pump, from a 20,000-gal. capacity tank installed beneath the shop floor. After tests of tanks are made, the water is dumped into a drain which returns it to the storage tank for recirculation.

Tender trucks are passed back into a truck shop immediately north of the tender shop and occupying the east end of the light machine bay. This shop occupies

Looking East Over the Driving Wheel Department of the Heavy Machine Bay

a floor area 264 ft. long by 55 ft. 10 in. wide, and is served by a 15-ton electric traveling crane. In addition to tender truck repairs, the truck shop is equipped to handle all of the work necessary on locomotive trucks, these being handled to the shop by the 40-ton crane serving the tender shop.

The forge shop occupies a bay 265 ft. long by 85 ft. wide, extending transversely across the west end of the building, and is separated from the other shop units by a corrugated, galvanized iron partition extending to the roof. This shop is served throughout its length by a 10-ton traveling crane of its own, but is not served by any of the cranes used elsewhere in the building. All parts to and from the forge shop are, therefore, moved on electric trucks, which operate between the various parts of the building over the concrete roadway surrounding the building and the concrete truckingways within the building itself.

The more important equipment within the forge shop includes new down-draft forges, steam hammers ranging up to 6,000-lb. capacity, and a total of 26 new down-draft oil and gas-fired furnaces for various purposes. A down-draft system was installed in the shop because of the interference which would have been caused to the crane operation by the usual arrangement of natural draft stacks. In the system employed, two separate draft lines were installed under the floor, leading to suction fans and stacks located at two opposite corners of the shop.

### Welded Pipe Systems Used

One of the features of the shop given special attention was the various pipe services provided, this being done with the view of reducing leakage losses and maintenance costs to a minimum. Originating in the power house, the various services are brought into the shop through a reinforced concrete tunnel, 6½ ft. high by 8 ft. wide, which extends across, under the center of the building. From the supply mains in this tunnel, branches or risers are brought up at the side walls and the column lines, and from these risers the service lines are distributed overhead along the face of the walls and columns on standard brackets and clips. From the service lines, drops are carried down at the columns and along the side walls in accordance with the plan laid out for providing the desired arrangement of compressed air connections, oxy-acetylene stations, steam and service water outlets, fire hydrants, drinking fountains, toilets, etc.

All pipe lines, with the exception of drinking water lines, have welded joints, and all valves and other fittings above two inch are flanged with mating flanges and welded into the lines. In addition, all short bends, elbows, tees and other pipe fittings were cut from straight sections of pipe and welded into the lines. Manifolds for air hose connections were made in a similar manner and welded into the air lines.

All live steam and return lines are insulated, and all drinking water lines are enclosed with an anti-sweat and temperature covering. In addition, the entire piping installation has been painted in the color scheme which has been adopted over the system, there being 13 colors or variations of colors employed in the shop layout.

### Conveniences Provided For Employees

In addition to the mechanical features of the shop, there are a number of features designed for the safety and convenience of the 1400 or more men employed in the various departments. These include machine guards, steel trestles for supporting platforms for work about locomotives, first aid stations, and conveniently-located and well-equipped washroom and toilet facilities. Altogether, there are 26 drinking fountains, 29 urinals, and 58 toilets in the building, and wash basins, sinks and wash fountains sufficient to accommodate 253 men at one time.

The washroom and toilet facilities in the forge, boiler and tender shops are housed in combination structures together with the foremen's offices in these shops. Similar facilities serving the erecting and machine shops are housed in a two-story structure located about midway in the length of the light machine bay. This structure also houses offices for the erecting and machine shop foremen and a tool repair room. All of the washrooms are equipped with Bradley wash fountains and metal lockers. The drinking fountains and urinals are located at intervals throughout the shop building most convenient to the men.

### Power House Includes Many Interesting Features

The new power house, just south of the locomotive shop, is a four-story brick and concrete structure supported on reinforced concrete foundations, and is equipped with a 160-ft. radial brick stack with an inside diameter of 12 ft. at the top. The floors of the plant are of concrete and tile, the lowest floor being just above the ground level. All of the window sash throughout the building are of steel construction. The two main floors in the plant are the ground floor, which carries the condensing and pumping equipment, all piping, and the ash conveyor, and the next floor above, which is the firing and engine-room floor.

As a result of considerable study, the plant was designed to burn pulverized fuel exclusively. The major equipment in the boiler room includes two stationary tubular cross-drum-type Babcock and Wilcox boilers, with a working pressure of 350 lb., and each with a capacity of 1,000 hp. The boilers are equipped with Diamond soot blowers and with Elesco superheaters, and are each fired by two Aero coal pulverizers. These latter units are motor-driven, each having a normal capacity of 6,000 lb. of coal an hour. Other equipment in the boiler room includes principally feedwater heaters and regulators, an economizer, boiler-feed pumps, induced-draft fans and recording instruments.

The engine room equipment consists of one 1,000-kw. d.c. turbine generator; one 500-kw. a.c. steam-driven auxiliary generator, used as a standby unit in case of a purchased-power supply failure; two steam-driven air compressors, each with a capacity of 2,500 cu. ft. of free air per minute; and the necessary switchboards. The purchased electric power at the plant is delivered over duplicate transmission lines at 12,000 volts, 3 phase, 60 cycles. Six 1,000-k.v.a. transformers, wired in groups of three, are used to step the voltage down to 2,200 and 550 volts at the switchboards. In addition, numerous other banks of transformers are located about the shop to supply power of the proper character to the various units of equipment.

### Operation of the Plant

In carrying out the operations at the power house, coal is received on a special track and is dumped into a track hopper from which it passes over a reciprocating feeder to a chain bucket conveyor, which, in turn, elevates it to an overhead coal bunker. If necessary, the incoming coal can be by-passed to a 24-in. by 24-in. double-roll crusher before being elevated to the coal bunker, but, ordinarily, this will not be necessary as

slack coal is being purchased. A magnetic separator in the reciprocating feeder removes all metallic substances from the coal before it is stored, thereby precluding damage to the coal pulverizers from this source.

From the coal bunker, which has a capacity of 500 tons, and which is located 55 ft. above the ground, the coal flows to the pulverizers by gravity, but on its way it passes through batch weighing scales, which dump in quantities of 200 lb. each. Blowers supplied with preheated air force the pulverized fuel into the furnaces where it burns while in a suspended state.

No grates are provided in the furnaces, and the fine ash from the pulverized coal, which settles on the floors of the furnaces, is raked out into an ash trough in the ground-level floor. From here the ashes are scraped up and carried to ash cars outside the building by a drag-scraper type conveyor.

The general contractor on the locomotive shop and the power house was Anglin-Norcross, Ltd., while all of the steel work in both buildings was done by the Dominion Bridge Company, which also furnished and installed all of the overhead electric traveling cranes. The boiler equipment in the power house was supplied and installed by Foster Wheeler, Ltd. All engineering, design and construction work in connection with both the shop and the power house was carried out under the general supervision of C. B. Brown, chief engineer of operation of the Canadian National, assisted by W. A. Duff, Engineer of Standards, J. Schofield, architect, and J. Roberts, general supervisor of shop methods. H. L. Currie, assistant engineer, was in charge of the construction.

# Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 15 amounted to 891,597 cars, a decrease of 65,901 cars as compared with the corresponding week of last year but an increase of 3,011 cars as compared with 1928. Reductions as compared with last year were reported as to all commodity classifications. Coal loading was 29,425 cars less than in the corresponding week of 1929 and miscellaneous loading was 18,778 cars less. All districts showed decreases as compared with last year but the Eastern, Pocahontas, Central Western and Southwestern districts showed increases as compared with 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

**Revenue Freight Car Loading**

Week Ended Saturday, February 15, 1930

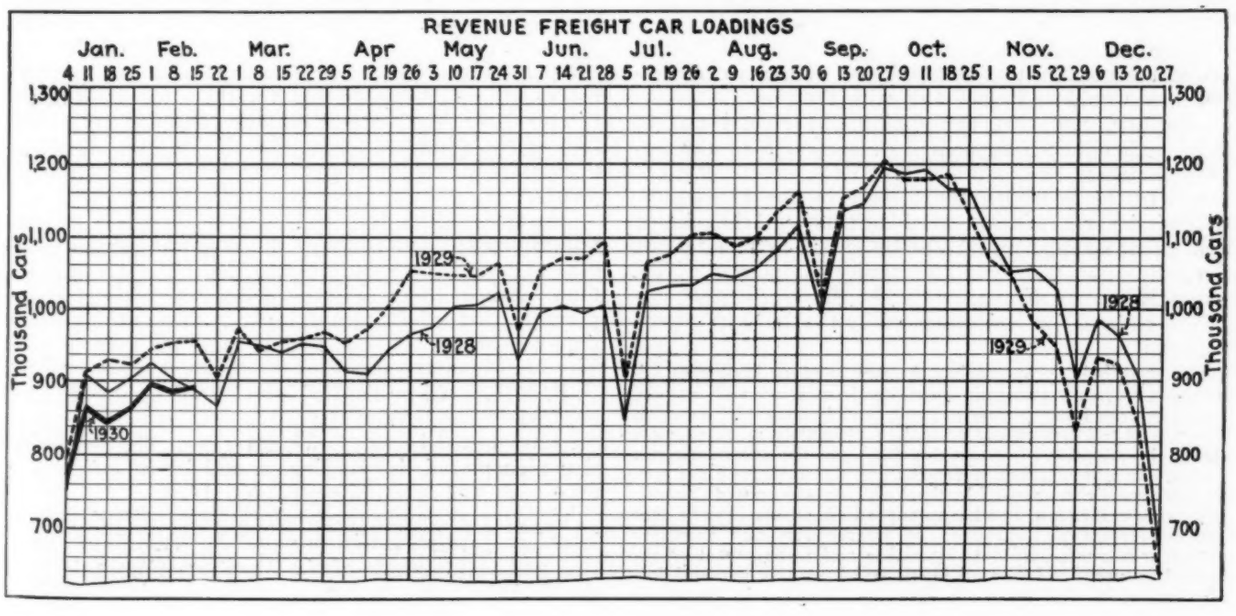
| Districts | 1930 | 1929 | 1928 |
|---|---|---|---|
| Eastern | 203,491 | 226,959 | 200,001 |
| Allegheny | 180,236 | 193,423 | 177,365 |
| Pocahontas | 54,852 | 59,015 | 50,138 |
| Southern | 141,276 | 148,405 | 143,409 |
| Northwestern | 105,901 | 113,538 | 117,100 |
| Central Western | 130,944 | 140,632 | 129,104 |
| Southwestern | 74,897 | 75,526 | 71,469 |
| Total Western Districts | 311,742 | 329,696 | 317,673 |
| Total All Roads | 891,597 | 957,498 | 888,586 |
| Commodities | | | |
| Grain and Grain Products | 44,755 | 47,153 | 41,310 |
| Live Stock | 25,887 | 26,879 | 31,698 |
| Coal | 182,325 | 211,750 | 157,037 |
| Coke | 11,428 | 13,599 | 10,675 |
| Forest Products | 59,134 | 61,524 | 68,273 |
| Ore | 8,905 | 9,605 | 8,422 |
| Merchandise L.C.L. | 239,523 | 248,570 | 249,172 |
| Miscellaneous | 319,640 | 338,418 | 321,999 |
| February 15 | 891,597 | 957,498 | 888,586 |
| February 8 | 886,581 | 955,981 | 906,477 |
| February 1 | 898,894 | 947,154 | 926,262 |
| January 25 | 862,621 | 926,474 | 902,664 |
| January 18 | 847,353 | 931,861 | 884,683 |
| Cumulative totals, 7 weeks | 6,026,496 | 6,432,088 | 6,170,220 |

The freight car surplus for the period ended February 8 averaged 373,825 cars, a decrease of 18,727 as compared with the week before. The total included 203,820 box cars, 116,758 coal cars, 26,121 stock cars, and 13,233 refrigerator cars.

## Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 15 totalled 57,130 cars, a decrease from the previous week of 120 cars and a decrease from the same week last year of 8,406 cars.

| | Total Cars Loaded | Total Cars Rec'd from Connections |
|---|---|---|
| Total for Canada | | |
| February 15, 1930 | 57,130 | 38,763 |
| February 8, 1930 | 57,250 | 38,932 |
| February 1, 1930 | 58,965 | 38,970 |
| February 16, 1929 | 65,536 | 45,409 |
| Cumulative Totals for Canada | | |
| February 15, 1930 | 383,535 | 252,582 |
| February 16, 1929 | 411,309 | 279,890 |
| February 18, 1928 | 438,780 | 262,929 |



# Northern Lines May Merge Without C. B. &. Q.

*I. C. C. imposes conditions to make unification fit consolidation plan*

WASHINGTON, D. C.

FOLLOWING the provisions of its consolidation plan promulgated in December the Interstate Commerce Commission on February 21 made public its long-delayed report on the proposed Great Northern Pacific unification, finding it would be in the public interest for the new company to acquire control of the Great Northern, the Northern Pacific and the Spokane, Portland & Seattle, conditioned on an agreement by the two northern companies to give up ultimately their joint control of the Chicago, Burlington & Quincy and upon presentation to it of a satisfactory supplemental plan or proposal in other respects for the establishment of system No. 12 of the consolidation plan (see map which appeared with *Railway Age* of January 25).

The other conditions relate to the inclusion of short lines, unified operation of terminals and use of the Spokane, Portland & Seattle by the Milwaukee.

The commission held out a possibility, however, that it might consider some plan by which the Northern companies might retain the Burlington line from the Twin cities to Chicago by saying: "Although the applicants' plan does not contemplate actual consolidation, it is of such permanent character that our approval of it, with control of the Burlington passing into the same hands that would control the Northern lines, would be clearly incompatible with our consolidation program. This is not to say that the Northern lines should be denied a permanent entrance into the Chicago district; that question we are not deciding now. The discussion of the applicants' proposal will have to do with the merits of the plan without reference to the Burlington, and our findings will be made in the light of conclusions reached in our study of the general consolidation scheme."

Commissioners Eastman and McManamy dissented, taking the position that consolidation of the two Northern lines would be inconsistent with the preservation of competition, and that the applications should not be dealt with under paragraph 2 of section 5 of the act. Commissioners Brainerd and Woodlock, concurring, objected to the provision for divorce of the Burlington. Commissioner Lewis concurred but expressed the opinion that public interest would best be served by maintaining the status quo and close community of interest of the Great Northern, Northern Pacific and Burlington.

The general conclusions stated by the majority are as follows:

The applicants' proposal has, in our opinion, important advantages. The economies in operation from it are well assured and are large in aggregate amount. Such means of lowering the cost of rail transportation and of ultimately reducing rates should be adopted wherever possible. By the use of shorter routes, one-system movements, common terminals, and car supply, the public may confidently look for substantial benefits from this unification, notable among which are savings in time due to rerouting, elimination of interchange, and increased access to markets. Efficient operation and management of the unified property is indicated by the evidence. A material loss of competition has not been shown. The plan is free from adverse criticism on the score of stock manipulation and financial complications. Such objections as have been presented to the consideration, terms and conditions involved can not, in our opinion be deemed serious. The issues which were raised in the transportation features of the plan have been substantially met by the applicants, and the objections based on the inclusion of the Burlington in the proposed system have been disposed of by our recent action in the plan for railroad consolidation.

## Conditions Proposed

The record will be held open for the submission to us by the applicants, for our consideration and approval, of a supplemental plan or proposal which, while not altering the recorded applications in other respects, shall give acceptable assurance and provide that:

(1) The Burlington shall be divorced from control by the Northern Companies within a reasonable period of time, such period to be stated as nearly as may be practicable;

(2) A bona fide and feasible plan for the acquisition and operation of all the so-called short lines of railroad named in System No. 12 of the consolidation plan, except such thereof as may be found by us, upon this record or from a subsequent showing, not to be required by the present or future public convenience and necessity.

(3) A comprehensive program and statement of proposed policy in the matter of the unified operation of terminals, or its equivalent, as hereinbefore explained.

(4) Suitable assurance that the Chicago, Milwaukee, St. Paul & Pacific Railroad Company, upon fair terms, may have access from Spokane to Portland and intervening points, over the lines of the Spokane, Portland & Seattle Railway Company, as provided in the said plan of consolidation.

Subject to the fulfillment of the foregoing terms and conditions precedent, the commission, without issuing an order, included in its report the usual findings of approval of the acquisition by the G. N. P. of control of the S. P. & S. by 99-year lease, and of control of the G. N. and N. P. by 99-year lease and stock ownership, of the issue of 10 shares of the no-par stock of the new company for organization purposes and of 4,970,976 shares to be exchanged share for share for stock of the two northern companies as delivered under the plan, and also of the proposed assumption by the new company of liability in respect of the securities of the three companies.

The applications dealt with were filed on July 8, 1927, and after extensive hearings the case was submitted on oral argument on October 5, 1928. The commission then withheld its disposition of the case until after the promulgation of its general plan. The report made public February 21 was decided upon on February 11. The lines involved included 554 miles operated by the S. P. & S., 8,164 by the G. N. and 6,668 by the N. P., a total of 15,386. With the Burlington system included the total would be nearly 27,000 miles. The consolidation plan placed the Burlington and its subsidiaries, a total of 11,473 miles, in system No. 14.

The several applications were considered together as interdependent parts of a proposal for the unified operation and management of the Northern Companies and the Spokane Company.

Intervening petitions were filed by 147 local associations, municipalities, business organizations, etc., of which 119 favored the granting of the applications and 18 were definitely opposed. Of the 11 state bodies which intervened, only one clearly favored the proposal. Of three counties, two were in favor and one was opposed; of six individuals, one was in favor and five were opposed. The interveners also included 11 minor railroad companies, nine of which asked to be taken into the applicant's system, and four Class I railroads.

The predominating expression of approval of the proposal from territories which are largely served separately by the Northern Lines, should be considered, the Commission says, along with the fact that over 96 per cent of all stations on these lines are local to one or the other of them. Thus, where direct rail competition is not a prominent factor, public sentiment seems to be generally favorable to the proposal. The total population which is purely local to one or the other line was given as 1,235,519, while that which is served by other roads as well is 2,013,330. Opposition to the plan was presented by such interveners as the Farmers Grain Dealers associations of North Dakota and Montana, the state commissions of Washington, Wisconsin, Iowa, South Dakota, Minnesota and Nebraska, the chambers of commerce, or other commercial bodies, of Duluth, Minn., Fargo and Grand Forks, N. Dak., Omaha, Nebr., and Tacoma, Wash., the Southern Minnesota Mills, the receiver of the Minneapolis & St. Louis, and the Chicago, Milwaukee, St. Paul & Pacific. The most serious opposition to the granting of the applications, according to the report, is found in the representations made by this intervener, which contends that the proposed unification would be detrimental to its welfare and would not be in the public interest.

An attempt to unify the Great Northern and Northern Pacific was made between 1893 and 1896, and again in 1901. Both projects failed because of adverse decisions of the Supreme Court of the United States, based upon consideration of the competitive nature of the lines. In *Northern Securities Company* v. *United States,* 193 U. S. 197, decided March 14, 1904, the court held that the arrangement was an illegal combination in restraint of interstate commerce and fell within the prohibitions and provisions of the act of July 2, 1890. The Northern Securities Company had issued its stock upon an agreed basis in exchange for more than nine-tenths of the stock of the Northern Pacific and more than three-fourths of the stock of the Great Northern. Following the decision above cited, the Northern Securities Company called in 99 per cent of its outstanding stock, the holder of each share surrendered to receive $30.17 of the stock of the Great Northern and $39.27 of the stock of the Northern Pacific. In *Harriman* v. *Northern Securities Company,* 197 U. S. 244, the Supreme Court affirmed an action of the lower court denying a temporary injunction against the pro rata distribution of the stock holdings of the Northern Securities Company. The report remarks that "it is worthy of note in connection with the case before us that, as a result of the rulings by the highest court in the *Northern Securities Company cases,* a common control of the Northern Companies through stock ownership was created."

It was stated that December 31, 1926, the same persons owned about 63 per cent of Northern Pacific stock and 59 per cent of Great Northern stock, or collectively, that 61 per cent of the total capital stock of both companies was held by the same stockholders. Excluding stock held in brokers' names, approximately 46 per cent was so held. The applicants believe, if the persons ultimately entitled to the stock held by brokerage firms are considered, that more than 50 per cent of the stock of each company is held by the same stockholders. In 1901 the Northern lines acquired joint control of the Chicago, Burlington & Quincy. Approximately 97 per cent of the Burlington's capital stock was purchased, and is owned in equal parts by the Northern Companies. Expenditures exceeding $230,000,000 have been made in constructing the Spokane and other connecting lines, and in providing joint facilities to be used by two or more of the three major systems.

The proposed leases were authorized by the boards of directors of the lessor companies and the new company. The attitude of the stockholders of the Northern Companies is expressed by the deposit of approximately 70 per cent of the stock of each of these companies with the deposit committee.

Foremost among the considerations in favor of the proposed unification, the report says, is the feasibility of making large operating economies, estimated by applicants at $10,142,811 a year, although it was contended by the Milwaukee that less than 50 per cent of the total saving estimated is dependent upon unification. The applicants also laid emphasis upon the need for strengthening the northwestern railroads, but the commission says "it is not clear that these roads are in such poor financial condition, compared with the western district carriers as a whole, that they, particularly, require the benefits of unification."

Extracts from the report are as follows:

### Advantages to Be Expected

The applicants' proposal to reduce the expense of operation is entirely sound in principle, and is entitled to serious consideration as a step toward ultimately reducing the cost of transportation, thus tending to prevent increased rates if not to lower existing rates, and aiding in the development and prosperity of the territory.

Among the immediate advantages to the public offered by the plan are quicker service by the use of shorter routes, and more expeditious handling of cars at terminals; the substitution of one-line rates for higher two-line rates affecting a considerable amount of traffic in sand, gravel, grain, hay, pulpwood, livestock, etc.; the more effective use of team tracks, now available only to shippers on one or the other line; augmented car supply by virtue of the availability of the equipment of both roads; and the elimination of switching charges for movements between the two lines. Service, it is stated, would be generally improved. Every local point on the Northern Lines would automatically become located on the enlarged system, and the unification would thus tend to broaden the markets available to shippers, particularly to the shippers of timber. The New Company proposes to carry on and to enlarge the work of colonization, and agricultural and industrial development, which is now divided, and to engage in the manufacture of equipment locally to a greater extent than is done now. As controverting the evidence on these matters it is no answer to say that the merger of any two parallel and competing lines would yield many of the transportation and other benefits mentioned, nor can it be fairly assumed that the new management would be less energetic and capable than that of the present companies.

The applicants' showing of public advantages, however, is not to be accepted without qualification. For example, the amount of traffic which would be affected by a substitution of one-line rates for two-line rates is not disclosed. A similar uncertainty surrounds the aggregate amount to be saved to the shippers by the proposed elimination of switching charges. On shipments originating at and destined to competitive points these charges are now generally absorbed by the line-haul carrier. If the savings in these respects prove to be material, a corresponding reduction in the revenues of the combined roads would seem to be inevitable, and the operating economies estimated by the applicants, to that extent, would be offset.

In the practical working of the unified system all the advantages which the applicants offer to their local public may not be realized, and yet there is ample evidence to show that

substantial benefits in the respects just considered would be afforded. On the whole, we think that the plan, in these respects, would be in the public interest.

In approaching the subject of competition, it may be desirable to consider, first, the extent to which the Northern Lines are not now in direct competitive contact. The evidence shows that of a total of 3,619 stations, 3,477, or 96.1 per cent, are situated on one or the other line, and are represented to be non-competitive as regards the Great Northern and Northern Pacific. Only 50 competitive points are exclusively served by the two roads. It appears from compilations presented that the unification would reduce the number of stations which are served by two or more railroads from 457 to 407, the 50 stations so affected having a population of 92,254 (1920 census). Of 4,703,120 tons of grain originated on the Northern Lines in 1926, 4,281,852 tons originated at local noncompetitive points, and of 724,447 tons of livestock, 606,790 tons were of similar origin. In the states of Washington, Idaho and Montana, during 1926, 18,973,703 tons of freight originated and 16,803,951 tons terminated at the stations of these roads. The proportion of each amount which was subject to exclusive competition between the two was 0.5 per cent and 1.3 per cent. The relation between the number of stations exclusively and jointly served, and the total number of stations on these lines in these states, was 0.8 per cent. A computation based on four selected months in each of the years 1924, 1925 and 1926 showed that the proportion of originating and terminating carload traffic on which competition would be eliminated by unification was 2.3 per cent, of tons handled 1.8 per cent, and of freight revenue 2.7 per cent. It was testified that of the total freight traffic, approximately three-fourths is local at one or both ends of the movement. * * *

Passing to a consideration of the broader competitive field, it appears that the larger centers of population and industry in the Northwest are included in the 92 stations which are common to the Great Northern and the Northern Pacific, and are also served by one or more lines not involved in the plan. It is here that the extremely keen competition between the Great Northern and the Northern Pacific, described by their officers and other witnesses, must chiefly obtain at the present time. It is here, also, that the applicants claim there will remain adequate competition from other lines after the proposed unification becomes effective. Despite the fact of record that each of the Northern roads is the most active competitor of the other, a condition which will be totally removed by the unification, it is contended that the competition of the other systems in the territory will be effective to insure to the public the maintenance of high standards of service. In this connection reliance is placed by the applicants mainly upon the Milwaukee, the Union Pacific Lines and the Canadian systems, with their connecting subsidiary lines in the United States. * * *

## Terminals

Representatives of the city of Tacoma urged that, in the event the applicants' proposal is found generally to be in the public interest, we impose a condition in our certificate or order requiring unified rail operation at docks and industries in that city and in other places where similar conditions may be shown to require it. This suggestion was concurred in by the Port of Seattle, and indorsed by the Milwaukee's representatives. It was thought impracticable, and not in the interest of good railroading or good service, by the applicants' officers. Considerations of importance were advanced on both sides of such a proposal. In connection with our final consolidation plan, *supra*, we expressed the conviction that consolidations should be accompanied by the unification of terminals, which should be thrown open to all users on fair and equal terms. The applicants' plan has advanced far enough in the direction of consolidation to warrant the taking of steps for the ultimate unification of operation at terminals served by the Northern Lines so that "every industry on whatever rails located shall have access to all lines radiating from that terminal, and every line carrier reaching that terminal shall similarly have access to all terminal tracks within the terminal area." The applicants should place themselves on record as agreeing to enter into some form of fair and reasonable joint arrangement for unified terminal operation in their territory, and, giving careful consideration to the principle announced by us as referred to in the above quotation, should prepare a terminal program designed to carry out the most economical, efficient and equitable plan that is possible.

The breadth of field in the East from which traffic may flow to the Northern Lines is such that many transcontinental systems are of necessity in competition for the long haul. The transportation situation in the Northwest has undergone an important change since the time when former mergers of the Northern Lines were undertaken. This has been caused by the extension of the Milwaukee to the Coast, the building of new lines in Washington by the Union Pacific's subsidiary companies, and the access to Tacoma and Seattle acquired by them through trackage agreements, the new construction of the Spokane International and the Soo Line, and the building of the Panama Canal. An extremely competitive situation has been developed. We are persuaded that the unification of the Great Northern and Northern Pacific will not so affect this situation as to impair railroad service or generally to operate against the public interest in so far as rail competition is concerned. This conclusion is predicated upon the continued ability of the other carriers to function effectively on all their lines in competitive territory. It is desirable to consider this question in the light of contentions made by the Milwaukee road, but by no other major carrier. Doubtless the Milwaukee's recent financial experience would cause the managers of that property to be especially apprehensive of any act of its competitors which might strengthen them. * * *

## Effect on the Milwaukee

While the testimony is forceful on either side of the controversy, we are not convinced that a closer union of the Northern Lines presages injury to the Milwaukee system. The record fails to show that the friendly relations between the Northern Lines in the past has injured the Milwaukee in obtaining through traffic. The effect of this closer union, if it affects other carriers at all, will probably be lost in the general growth and development of the Northwest. The experience of the Milwaukee prior to receivership is assuredly no criterion in forecasting the future of that property. In authorizing the reorganization we had faith in the road's prospects. It is impossible to accept the grounds of the protestant's contentions and to find that the competitive activities of the Great Northern, Northern Pacific and the Spokane Company as a single system would, in practice, prove more pronounced or more difficult to contend with than those of the constituent roads in the aggregate. It is, therefore, our view that the ability of the Milwaukee to provide effective competition would not be materially impaired as a result of the proposed unification. A similar view is held with regard to the other systems competing with the Northern Lines.

Vigorous opposition to the applicants' proposal was offered by the protestants, particularly by the Milwaukee interests, on the theory that the grouping of strong roads contemplated would create a system that would dominate the Northwest, and would effectually prevent any subsequent grouping of comparable size and strength. The protestants sought to have us consider the Burlington as an integral part of the proposed system, which would then have nearly 27,000 miles of operated road, and to confine our comparisons to the northwestern region. It appears that the Spokane, Northern Lines and the Burlington would comprise over 20 per cent of the total Class I railway mileage in the western district, and approximately the same proportion of investment, revenues and income. Together they would exceed the combined Southern Pacific and Atchison, Topeka & Santa Fe systems in mileage operated, and have nearly 80 per cent of the combined net railway operating revenues of those roads. The Great Northern Pacific-Burlington would have a mileage of 26,711 miles, operating revenues of $416,582,573, net railway operating income of $94,115,028, and a rate of return of about 5.15 per cent without allowing for the estimated economies. The evidence introduced in connection with the size and strength of the proposed Great Northern Pacific, with and without the Burlington, as compared with other systems and with the western district as a whole, was very comprehensive. In view of the consolidation plan which has now been promulgated, this evidence need not be further discussed.

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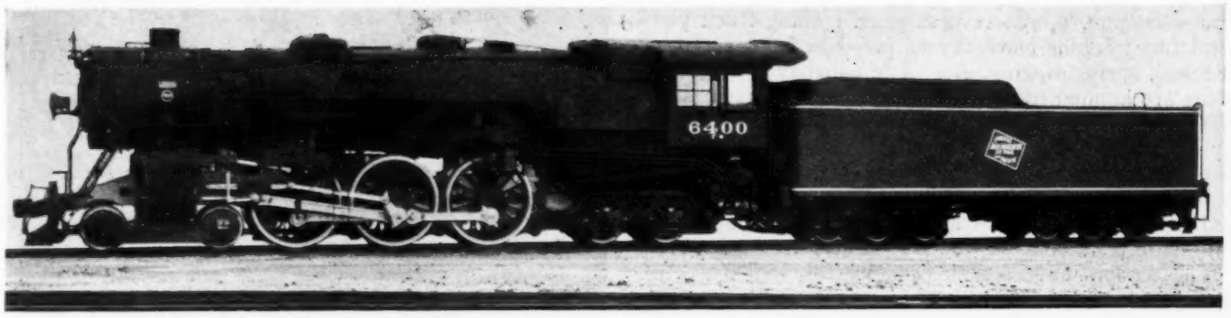
APPROXIMATELY 930,000,000 passengers a year are carried by the four British railway companies within the limits of Greater London alone, according to figures recently published by the Railway Newsletter (London). To accommodate this traffic, the Southern maintains 200 stations, the London & North Eastern 98, the London, Midland & Scottish 75 and the Great West- 22 within a 10-mile radius of Charing Cross. There are also 185 subway stations. The average number of passengers using the principal stations daily is as follows: Liverpool Street, 230,000; London Bridge, 135,000; Waterloo, 121,000; Broad Street, 120,000; Victoria, 96,500; Euston, 60,000; Paddington, 55,000; St. Pancras, 30,000, and Marylebone, 10,500.




*One of the 4-6-4 type Locomotives Built for the C. M. St. P. & P. by the Baldwin Locomotive Works*

# Fourteen 4-6-4 Type Locomotives for the Milwaukee

## *For heavy passenger service over the Chicago and Milwaukee and the LaCrosse and River divisions*

THE Baldwin Locomotive Works is now delivering 14 4-6-4 type locomotives to the Chicago, Milwaukee, St. Paul & Pacific for use in heavy passenger service over the Chicago and Milwaukee, and the LaCrosse and River divisions. These locomotives will replace a number of 4-6-2 type locomotives now being used. It is expected that the new power will make it possible to operate through passenger-train service with fewer delays for terminal attention, coal and water, and will permit the handling of heavy trains without helper service, which was formerly required over certain limiting grades and curves.

The new 4-6-4 type locomotives have 79-in. drivers, and the boilers operate at a working pressure of 225 lb. The cylinders are 26 in. by 28 in. Each locomotive develops a tractive force of 45,820 lb. The total weight of the engine is 375,850 lb., of which 189,720 lb. is carried on the drivers. The factor of adhesion of 4.14.

### Features of the Design

All of the 14 locomotives are designed to burn soft coal. However, the railroad is planning to burn semi-lignite on one locomotive as an experiment. There is no difference in the detail design of this locomotive from the others, except the smoke-box netting.

The revolving weights on the main drivers of each locomotive are cross-balanced and 50 per cent of the reciprocating weights are counterbalanced.

The trailing truck frame is of Commonwealth design and is equipped with two roller-bearing units designed by the American Steel Foundries. Each unit consists of two wheels mounted on a hollow axle, which rotates on Timken roller bearings around a stationary axle. The latter conforms to the standard axle design having 6½-in. by 12-in. journals. A cast-iron block is substituted for the usual brass and babbit-lined journal bearing. The Timken bearings which transmit the axle load to the wheels are press fitted over the stationary axle, with the outer portion of the bearing pressed inside the end of the hollow rotating axle. The rollers are directly in the plane of the tread of the wheel, the entire bearing assembly being placed within the wheel center.

### Special Equipment

Alemite lubrication is applied at practically all bearing points, such as the valve gear, including the reverse-shaft bearings; the driving-box wedge and shoe face,

**Principal Dimensions and Weights of the Chicago, Milwaukee, St. Paul & Pacific 4-6-4 Type Locomotives**

| | |
|---|---|
| Railroad | Chicago, Milwaukee, St. Paul & Pacific |
| Builder | Baldwin Locomotive Works |
| Service | Passenger |
| Rated maximum tractive force | 45,820 lb. |
| Weight on drivers ÷ max. tractive force | 4.14 |
| Cylinders, diameter and stroke | 26 in. by 28 in. |
| Valve gear, type | Baker |
| Weights in working order: | |
| On drivers | 189,720 lb. |
| On front truck | 79,930 lb. |
| On trailing truck | 106,200 lb. |
| Total engine | 375,850 lb. |
| Total engine and tender | 665,000 lb. |
| Wheel bases: | |
| Driving | 14 ft. |
| Total engine | 40 ft. 9 in. |
| Total engine and tender | 81 ft. 7½ in. |
| Wheels, diameter outside tires: | |
| Driving | 79 in. |
| Front truck | 36 in. |
| Trailing truck | 43 in. |
| Boiler: | |
| Steam pressure | 225 lb. |
| Fuel, kind | Soft coal |
| Diameter, first ring, inside | 82 in. |
| Firebox, length and width | 120⅛ in. by 96 in. |
| Tubes, number and diameter | 58—2¼ in. |
| Flues, number and diameter | 182—3½ in. |
| Length over tube sheets | 19 ft. |
| Grate area | 80 sq. ft. |
| Heating surfaces: | |
| Firebox and combustion chamber | 307 sq. ft. |
| Arch tubes | 14 sq. ft. |
| Thermic syphons | 90 sq. ft. |
| Tubes and flues | 3,794 sq. ft. |
| Total evaporative | 4,205 sq. ft. |
| Superheating | 1,815 sq. ft. |
| Combined evaporative and superheat | 6,020 sq. ft. |
| Tender: | |
| Water capacity | 15,000 gal. |
| Fuel capacity | 20 tons |

brake hangers, power reverse gear, trailing-truck pedestal face; engine-truck center pin, box hub face, box pedestal, spring rigging, etc. The usual type of grease plugs are applied to the main and side rod bearings.

The new Milwaukee 4-6-4 type locomotives are equipped with three Nicholson Thermic syphons, Alco reverse gears, type E superheater, standard modified type B stokers, and have one-piece cast steel cylinders and bed. All of the 14 locomotives are equipped for automatic train control.

The tenders have a tank capacity for 15,000 gal. of water and 20 tons of coal. They have Commonwealth cast steel frames and trucks, which are of six-wheel design. The wheels are 33 in. in diameter, and the journals are fitted with Timken roller bearings.

# Rotating and Reclining Seat for Day Coaches

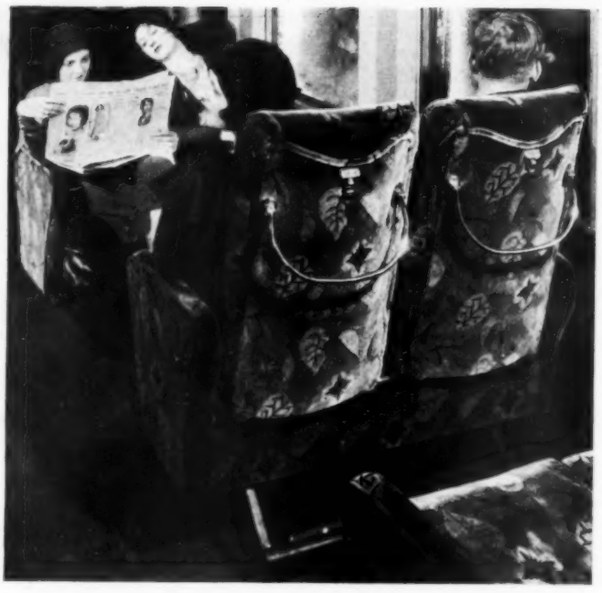
IN the illustration is shown a rotating and reclining day-coach seat which can be faced in any desired direction, thus permitting coach passengers to face the windows for full enjoyment of the scenery along a rail route. This coach seat is designated as the 155 PSS by the manufacturers, the Heywood-Wakefield Company, 209 Washington street, Boston, Mass. The chair rotates on a small radius and is so designed that it can

**The Seat May Be Faced in Any Direction**

be placed with the armrest flush with the side wall. In addition to its rotating features the seat is equipped with individual backs which can be reclined separately to four restful positions by means of levers located at the side of the chair. The same levers return the backs to their original position easily and quickly by means of a spring arrangement.

### Cushion Construction

The cushion construction is of the double-deck bucket type. The lower spring construction is of the design which, over a period of years, has proved to be substantial for railroad seat construction. The upper spring



**The Heywood-Wakefield Rotating and Reclining Day Coach Seat**

construction is of the Comfy type. Between the springs and the upholstery material, a high grade of genuine curled hair is used. The upper and lower spring sets are fastened permanently together, a bellows type of fastening being used.

In the back, the Comfy type of springs are used, and the top of the headrest is slightly concaved in the wood frame. This feature prevents the head from rolling with any side sway of the car while the passenger is sleeping. The headrest is filled with genuine curled hair.

This seat, furnished for the Aristocrat, a C. B. & Q. fast train between Chicago and Denver, rotates on a 43-in. center space and is upholstered in a figured mohair although it can be supplied in a non-rotating type of base and furnished with a variety of coverings.

**The Seat Presents a Number of Party Grouping Arrangements**

# The Danger in High Stock Prices

*Market values have risen out of proportion to earnings, present or immediately prospective*

By Morris P. Taylor

A STATEMENT frequently and loosely made by business men and shippers' organizations is that the railways of the United States are highly prosperous at present as indicated by the high levels at which the common stocks of the better carriers were sold during 1929 and, in many cases are continuing to sell, as compared to the prices of a few years ago. It is assumed that higher stock prices are direct indications of larger revenues and profits. The quotations of rail stocks have been used by the "agricultural bloc" as an argument for lower rates on farm commodities. However, a serious analysis leads one to doubt if stock prices can be taken in such an offhand way as direct indications of the existing rate structure. Market prices of stocks shift rapidly and are subject to many influences other than the financial reports of the corporations in question. There is widespread controversy as to whether the current levels of prices are in line with the intrinsic values of the stocks.

Naturally, the improvement in the position of rail shares on the stock market has been gratifying to the carriers. The railways emerged from war control with their properties below par, and with their credit demoralized. They have been able, with skillful management, to perfect the service to a point never before obtained, and completely to restore themselves in the confidence of investors. It is hard for them to realize that the high prices of rail shares may be a point of weakness in their relations with the public.

Purchasers of railroad common stock fall into two groups, those buying for income return and those seeking increase in capital values. According to the modern theory of investments, purchases for income are distributed over a selected list of bonds and stocks. Safety and dividend return are the prime considerations with this group of buyers. Although stocks are bought for their dividend returns, nevertheless if a stock rises conspicuously in market value it is disposed of at a profit and reinvestment sought at a lower level. On the other hand, those who purchase stocks for increase in capital value plan to resell at higher levels, and pay little attention to dividends. The buying and selling operations of the two groups are affected differently by price movements on the stock market.

According to the president of the New York Stock Exchange, the market value of the listed securities has nearly doubled in the last four years. In this upward march of prices, the railway shares have participated conspicuously, and this remains true even if we eliminate the instances in which quotations were affected by proposed mergers and by pool operations. It must always be remembered, however, that stock prices and commodity prices are different. All, or nearly all, of a commodity produced must be sold, whereas a large proportion of the stock may never come on the market.

Three views are expressed concerning the present position of rail shares. According to one view, railway common stocks have advanced in price during the last four years solely as a result of improvements in income, dividends, management, and future prospects. The stocks have properly become more attractive as investments and prices have therefore advanced. According to a second view, railway common stock prices have advanced to a greater extent than has been justified by improvements in earnings and dividends. The stocks have been driven up due to a prolonged period of optimism and active speculation, which was started with easy money. In other words, railway stock prices have been carried up by the market. According to a third view, railway stocks are still too low. Certain market operators believe that due to the great activity in industrial stocks, the rails have fallen behind in the upward march of prices.

Which of these views is correct? The answer is of importance in view of the influence of stock prices on the course of rate regulation. If high quotations on railway shares are a direct expression of increased net income, then such prices will be quoted to support rate reductions. On the other hand, if the level of railway shares is due substantially to speculation, then it cannot be used as an argument for revision of rates downward. That the matter has a practical bearing on rate cases is obvious. It is true, from a legal standpoint, that the market value of a railway's stocks has no bearing on the reasonableness of its rate schedule. Nevertheless, stock prices are widely accepted as an index of railroad prosperity by chambers of commerce, farmers' organizations, and the public in general. Many feel that high price levels of rail shares indicate undue prosperity, and they therefore exert pressure on the Interstate Commerce Commission to secure lower rates. As an example, it may be recalled that in opening the hearing of the Interstate Commerce Commission on the grain rates under the Hoch-Smith resolution, on May 27, John E. Benton, the counsel of the National Association of Railroad and Utilities Commissioners, in urging a general reduction of grain rates, cited the high position of rail shares as evidence that the carriers were unduly prosperous. It is therefore important to determine whether the stock market quotations are an expression of increased earnings of the carriers, or whether they are due to conditions other than the income accounts of the railroads.

It is possible to determine the basis for the advance in railway stock prices by comparisons of the stock quotations and the income accounts of the leading carriers for the last four years. The analysis should be limited to dividend-paying roads the shares of which are actively traded in. The carriers selected for such an investigation are as shown in Table I.

It should be noted that two of the carriers selected, the Rock Island and the Colorado & Southern, did not pay common stock dividends during the first part of the four-year period. Nevertheless, it may be said that the list includes the most prosperous of the American railways, especially when it is remembered that the income from the Burlington appears in the accounts of the Great Northern and Northern Pacific systems.

The income accounts of the above twenty-four carriers have been combined as if they were all merged into one system. Such a combined account gives us the total operating revenue, operating expenses, net railway operating income, total income, net income, and dividends paid by such a consolidated system. In a like manner, we can obtain the total long-term debt, par value of stock, and total capitalization of such a consolidation. Thus we have a weighted picture of the capitalization and revenues of these twenty-four carriers over the four-year period. Such a consolidation has something of the advantage of an index number, in getting away from the particulars of individual carriers.

The total market value of the common stock of such a consolidation can be obtained by multiplying the quotations for each rail stock by the number of shares outstanding and adding the products. In what follows only the market values of common stocks have been considered, as their dividends are more dependent on earnings than those of preferred shares. Proper adjustments were made for stocks with $50 par value. The Great Northern preferred was considered a common stock, in view of the fact that there are no shares junior to it.

**Table I—Carriers Selected for Investigation**

| | |
|---|---|
| Atchison, Topeka & Santa Fe | Louisville & Nashville |
| Atlantic Coast Line | New York Central |
| Baltimore & Ohio | New York, Chicago & St. Louis |
| Chesapeake & Ohio | Norfolk & Western |
| Chicago & North Western | Northern Pacific |
| Chicago, Rock Island & Pacific | Pennsylvania |
| Colorado & Southern | Pere Marquette |
| Delaware & Hudson | Reading |
| Delaware, Lackawanna & Western | St. Louis-San Francisco |
| Great Northern | Southern Pacific |
| Illinois Central | Southern |
| Lehigh Valley | Union Pacific |

The stock market values used are the high and the low quotations for each year. The exact average selling price of a stock for any period cannot be obtained, as prices fluctuate rapidly and the sales at each level on a shifting market are not tabulated. Therefore, comparisons have been based on the high and low quotations for each year. The financial results of all transactions during that year fall somewhere within this range. The ratios based on the high prices are especially worthy of consideration, since a high price represents what a buyer voluntarily pays for a share of stock, whereas the low price may represent a forced sale at a disadvantageous moment. Nevertheless, the results have been computed on both bases.

## Discussion of Consolidated Balance Sheet and Income Account

The first subject of interest in the above accounting is the relatively greater increase in stock capitalization as compared to long-term debt, the stock outstanding having increased 7.6 per cent in the four-year period, while the long-term debt has only increased 5 per cent. This is contrary to the commonly expressed opinion that the ratio of bonds to total capitalization on American railroads is constantly increasing. This particular group of railroads, at least, has been able to preserve a satisfactory capitalization ratio for the last five years. Part of the increase has been due to exchanges of convertible securities for stock, and part due to issues sold on the market. This ability to issue stock, either for convertibles or for cash, has been due largely to three factors: First, the net income available for dividends has increased some 12 per cent; second, the roads have adopted somewhat more liberal dividend policies, increasing the dividends paid some 25 per cent; and third, the stock market has been quite bullish over the entire period.

There has been relatively little change in railway operating revenue over the four-year period, though apparently expanding in 1929. Whatever increased profits the roads may have realized have obviously not been due directly to expanding business or higher rates. It is interesting to note that over the same period the operating expenses remained relatively stationary for the first three years, but decreased 89 million dollars in 1928, as compared with 1927. The efficiency of railroad operation has certainly been increased, especially when we remember that wages have not been reduced, nor have there been marked changes in the materials market. It is also of interest to note that all of the increased dividends paid in 1928 as compared to 1925 (61 million dollars) can be accounted for in the 67 million dollar decrease in operating expenses in the latter year as compared with the former. It should also be noted that the operating revenue per market value of common stock has declined, as follows:

**Table II—Consolidated Balance Sheet and Income Account of Twenty-four Railroads***

(Million dollars a)

| Item | 1925 | 1926 | 1927 | 1928 | 1929 b |
|---|---|---|---|---|---|
| Common stock | 3,666 | 3,721 | 3,841 | 3,970 | .... |
| Preferred stock | 641 | 626 | 623 | 665 | .... |
| Total long-term debt | 5,659 | 5,999 | 5,981 | 5,948 | .... |
| Railway operating revenue | 3,609 | 3,792 | 3,650 | 3,595 | .... |
| Railway operating expense | 2,666 | 2,749 | 2,688 | 2,599 | .... |
| Railway tax accruals | 221 | 243 | 235 | 238 | .... |
| Equipment and joint facility rentals | 31 | 35 | 36 | 38 | .... |
| Net railway operating income | 689 | 764 | 688 | 720 | .... |
| Total income | 892 | 984 | 924 | 961 | .... |
| Interest on funded debt | 267 | 270 | 273 | 270 | .... |
| Total interest and rental deductions | 398 | 408 | 411 | 406 | .... |
| Net income | 493 | 576 | 513 | 554 | .... |
| Dividends on common stock | 230 | 262 | 335 | 291 | 305 c |
| Dividends on preferred stock | 31 | 30 | 32 | 31 | .... |
| Dividend rate on common stock (per cent) | 6.28 | 7.04 | 8.73 | 7.33 | .... |
| Market value of common stock— | | | | | |
| based on high price | 4,965 | 5,054 | 6,009 | 6,557 | 8,135 |
| based on low price | 3,612 | 3.996 | 4,788 | 5,419 | 5,685 |
| based on closing price on October 31, 1929 | .... | .... | .... | .... | 6,570 |

* Data from *Preliminary Statement of Capitalization and Income of Class I Railways* issued by the Interstate Commerce Commission. The lack of an exact balance in some of the above figures is due to similar discrepancies in the source.

*a* Except for the item on dividend rate on common stock, which is given as percentages.

*b* First ten months.

*c* Estimated from dividend rates as shown in *New York Journal of Commerce.*

| | 1925 | 1926 | 1927 | 1928 |
|---|---|---|---|---|
| Based on high selling price | $0.73 | $0.75 | $0.61 | $0.55 |
| Based on low selling price | 1.00 | 0.95 | 0.76 | 0.66 |

It can be concluded, therefore, that the increase in stock prices has not been the result of increased revenues.

Net railway operating income has increased somewhat, while total income has gained at a somewhat faster rate, due to an increase in miscellaneous other income. The fixed charges and rentals have increased but little, leaving a considerable gain in net income. However, neither total income nor net income has kept pace with the stock market advances, as is shown by the following amounts of income per dollar of stock market value:

| | 1925 | 1926 | 1927 | 1928 |
|---|---|---|---|---|
| Total income | | | | |
| Based on high selling price | $0.180 | $0.195 | $0.154 | $0.147 |
| Based on low selling price | 0.247 | 0.246 | 0.193 | 0.177 |
| Net income | | | | |
| Based on high selling price | 0.099 | 0.114 | 0.085 | 0.084 |
| Based on low selling price | 0.136 | 0.144 | 0.107 | 0.102 |

It therefore appears that the stocks, considered strictly as investments at present levels, are not backed by as large incomes as in 1925.

A somewhat greater proportion of net income has

been paid out in dividends in recent years, showing that the roads have adopted more liberal dividend policies. Thus the ratio of income available for common stock dividends to dividends paid for the four years has been as follows:

| | | | |
|---|---|---|---|
| 1925..... | 2.01 | 1927..... | 1.44 |
| 1926..... | 2.08 | 1928..... | 1.80 |

The extremely low value for 1927 was due to the extraordinary dividend the Lackawanna disbursed that year.

The dividend rate has increased considerably over the four-year period, having risen from 6.28 per cent in 1925 to 7.33 per cent in 1928. Here again the figures are somewhat out of line in 1927 due to the Lackawanna dividend of that year paid out of surplus. Although dividends have increased materially, the rate of return on the stock at market value has declined, as may be seen in the following tabulation, given in percentages:

| | 1925 | 1926 | 1927 | 1928 | 1929 |
|---|---|---|---|---|---|
| Based on high selling price.... | 4.63 | 5.18 | 5.57 | 4.44 | 3.75 *a* |
| Based on low selling price.... | 6.37 | 6.56 | 7.00 | 5.37 | 5.37 *a* |
| Based on closing price on October 31, 1929..... | ... | ... | ... | ... | 4.65 *a* |

*a* Obtained by using as a basis the stock outstanding in 1928 and the dividend rates and stock prices for the first ten months of 1929.

It is apparent that the decline in the latter part of 1929 did not reduce prices to the point where railway stocks could be regarded as favorable a medium for long-time investment as they were a few years ago, unless the purchasers of stock for income return are to be satisfied with considerably lower rates than in the past. It is interesting to note that in spite of the recent occurrences on the stock market, the "low" value of common stocks for the first ten months of 1929 was higher than that for 1928 (see Table 1).

An unusual condition has arisen. For the last two years the stocks of a slowly expanding industry, one of moderate profits, the earnings and operations of which are vigilantly regulated by state and federal laws and commissions, have so advanced in market value that they yield less, in many cases, than the mortgage bonds of the same concerns. During the period of rapid advance in the market, railway operating revenues were practically stationary, showing that there is no justification for the higher prices in expanded business. The nature of the railway business and of railway regulation make the huge "melons" of industrial concerns very rare. It has been shown that the ratio of income available for dividends to dividends paid has decreased somewhat, so there can be relatively little hope for substantial dividend increases in the future, unless the basic earnings and costs of the business change materially.

Certain investors lay considerable stress on the appreciation of city properties and terminal lands owned by the railroads. If these properties could be sold, at present valuations, the profit would be enormous; but in most cases these properties are the parts of a railroad system that the road cannot possibly spare.

This brings us to the O'Fallon decision, which has been made much of on the stock market. There is no doubt that it gives the roads a protection against unfair regulation and valuation that they did not have before, but it is very doubtful if it can be used to raise rates, even if the roads desired to do so. All rate increases are subject to prolonged litigation and argument, and it would be very difficult, if not impossible, to increase rates materially at present. The O'Fallon decision really results in preserving the present status, with possible improvements in the future, but with no chance of greatly increased profits within a short period.

It has been shown above that railway stock prices have advanced considerably more than has been justified by the increases in earnings and dividends. It becomes quite apparent, therefore, that high levels are in good part due to the peculiar conditions on the exchange, to the high pressure of speculation that has affected the stock market for the last few years. The brokerage houses have generally given encouragement to this, and have issued optimistic accounts of the possibilities of rail stocks in general, or of a certain stock in particular; but if these recommendations are checked up by examination of the published earnings and expenses of the roads, it becomes apparent that even the substantial improvement in the condition of the lines has already been discounted, for most roads, by the large increase in market price. It is true that the same argument applies to many industrials, which have been selling at present at such levels as to yield even less than government bonds; but industrial stocks are more subject to rapid increases in earnings and dividend rates than rails. An industrial concern has a chance to make huge profits in times of unusual prosperity, whereas a railroad is practically prohibited from raising rates to take advantage of booms, while the materials it must purchase are not subject to such regulation. Of course, a railroad is somewhat more protected from periods of depression than an industrial concern, but that has little to do with the present market situation. The nature of the industry, and its financial history since the war, indicate that rapid expansions in earnings are not to be expected.

In an industrial line, the booming of stocks might do no particular harm, except possibly to the last purchaser. But to the railroads it can do considerable damage: All the radical elements in politics seize it as an evidence of exorbitant rates and concealed profits, and immediately start agitation for reductions in a rate scale which is none too adequate at present. The average citizen fails to investigate further; if he is informed that railroad stocks are selling at unheard-of levels, he makes the assumption, quite reasonably under ordinary circumstances, that there must be immense profits, and that rates can be reduced without harming the carriers. The agricultural interests, in particular, in the light of the Hoch-Smith resolution, regard increased prices of certain rail stocks as evidence that freight rates on their products should be revised downward. They can exert strong pressure on Congress and on the course of rate regulation.

It must, therefore, be made plain by the railroads, in handling rate cases before regulatory bodies, that the high market quotations are not necessarily the reflection of the income account, and that if the market chooses to bid stocks paying $8 dividends up to around 240, this does not necessarily indicate that the roads have net earnings at present to justify these levels. It should also be made clear that the dividends paid have little influence on the rate structure; even for the group of rails selected in this study (which were purposely selected as the most prosperous of the carriers), the dividends paid in 1928 were only 8.1 per cent of the railway operating revenue. It is, of course highly desirable to have the market in such condition that railroads desiring to obtain additional capital by issuing common stock can do so; but the speculative movement can become a boomerang if stock exchange prices are advanced to such levels that they constitute an argument for lower freight rates.

# Further Hearings Held on "Reciprocal" Buying

*Investigations into use of Swift traffic on railroads raise question regarding quality of purchases induced by it*

THE Federal Trade Commission continued its hearing at St. Louis, Mo., and Omaha, Neb., last week, and at St. Paul, Minn., on Tuesday of this week, on its complaint against the Mechanical Manufacturing Company and others for using the traffic of Swift & Co. to influence the purchase of draft gear and other equipment. The Commission introduced further letters from the traffic officers of Swift & Co. to executive and traffic officers of railroads and further testimony was developed on the effect of these letters in influencing roads to buy the bumping posts and draft gear of the Mechanical Manufacturing Company, which the Swift family owns. During the hearings, the government endeavored to produce evidence purporting to show that the railway purchases from the Mechanical Manufacturing Company were solicited by Swift & Co. from railroad officers principally interested in traffic. A feature of the hearings was the prominence given to the relative merits of the draft gear, the Commission having adopted a line of questioning designed to challenge the statement that "the price (of the draft gear) was in line and the quality equal to any on the market."

### Hearing at St. Louis

Officers of the Missouri Pacific, the Wabash, the St. Louis-San Francisco and the Missouri-Kansas-Texas were examined in St. Louis. Both James Newell, vice-president, accounting, of the Wabash, who appeared for President Taussig, and W. C. Streit, assistant to W. C. Maxwell, vice-president, traffic, of the Wabash, who appeared for Mr. Maxwell, testified that R. O'Hara and W. A. Mayfield, traffic manager and assistant traffic manager, respectively, of Swift & Co., had solicited purchases for the Mechanical Manufacturing Company on the basis of "reciprocity" and they surrendered correspondence relating to their negotiations.

T. J. Frier, purchasing agent of the same road, said he was not a party to the original negotiations between Swift & Co. and the Wabash for the products of the Mechanical Manufacturing Company, but that subsequently he had participated in a discussion of Swift traffic. As a result of instructions from the president, he placed one order with the Mechanical Manufacturing Company for 25 sets of its draft gear and a subsequent order for 40 sets for the Wabash; also an order for 10 sets for the Ann Arbor. When asked by the respondent if the draft gears were bought on a quality and price basis, he answered that they had been bought for experimental purposes. On further questioning by the Commission, he said that there were at least eight manufacturers of draft gear in business and testified that it had not been necessary or customary in the past for draft gear manufacturers to deal with the traffic department in negotiating for purchases.

G. F. Hess, superintendent of motive power of the Wabash, testified that he had been directed to test the Durable gear and had made the test in a laboratory equipped to follow closely the A. R. A. recommended practice. The Mechanical Manufacturing Company was represented at the test. When asked if the gear met the requirements of the test, he answered "No" and said that he recommended against purchasing the gear as first tested. He then testified that he was called upon to make a second test, following announcement that certain improvements had been made in the gear, and that he then approved the purchase by the Wabash of the first order of 25 sets for a service test. He testified further that he had not recommended the purchase of the next 40 sets.

### What Was Expected of the M. P.

C. E. Perkins, vice-president in charge of traffic of the Missouri Pacific, submitted a file of correspondence from which the Commission selected a large number of letters, among them one from R. O'Hara of Swift & Co. to President Baldwin, which showed what Swift & Co. expected of the Missouri Pacific. This letter read in part as follows:—

"I note from articles in the press that you are going to be in the market for 3,100 freight cars in addition to some switch engines.

"I have been trying to get to St. Louis to talk with you concerning the Laughlin draft gear which the Mechanical Manufacturing Company (a Swift-family-owned corporation) is putting out. This gear is being utilized on all of the Swift equipment and we expect it to be utilized on at least one-third of the equipment of the carriers in the future."

At this point the witness was asked if the Missouri Pacific solicits Swift's traffic, to which Mr. Perkins answered "Yes," saying that traffic was the life blood of the railroad. He testified that the Swift business amounted to about 15,000 cars in 1929 and, although he could not recall the 1928 tonnage, he was of the opinion that the "business from all the packers had increased in 1929, as a result of perfecting service."

W. A. Hopkins, general purchasing agent of the Missouri Pacific, testified that, in accordance with instructions from the president to consider the gear and after conferences with other officers, the Missouri Pacific bought 500 of the Durable gear in 1929 at $65 a set. O. A. Garber, chief mechanical officer of the Missouri Pacific, testified that the gear had at first been subjected to laboratory test by the Missouri Pacific, after which he had approved the purchase of 500 gear to be applied in stock cars for a service test.

J. R. Koontz, vice-president of traffic, St. Louis-San Francisco, testified that Mr. O'Hara, traffic manager of Swift & Co., had solicited him to buy the draft gear of the Mechanical Manufacturing Company and that

he had talked about it with the president of his road. The attorney for the Commission then asked Mr. Koontz if he was a mechanical officer and when he stated that he was not, he was again asked if O'Hara talked about traffic and replied that he (O'Hara) didn't mention Swift traffic but added, "He didn't need to mention it. I had full knowledge of the Swift traffic." Being then asked to explain certain statements in his correspondence with the purchasing department, he stated that "We were against pressure front and rear."

B. T. Wood, vice-president in charge of purchases of the Frisco, testified that his negotiations with the Mechanical Manufacturing Company for draft gear did not begin until after he had received letters from the traffic department of his road. Some time later, as a result of conferences, 25 sets of the Durable gear were bought, following which other orders were placed.

H. L. Worman, superintendent of motive power of the Frisco, testified that he had studied the Durable gear at the request of the vice-president and concluded at that time that it was not a mechanically efficient gear and did not recommend it for trial. He admitted that in a report to the vice-president of purchases he had expressed "the hope that the Frisco could keep away from this gear." It was his opinion that "the gear would not perform as a gear should and would be high in maintenance." He said he went on record "very strong" against the gear and could not change his mind until a service test showed that he was wrong, adding that it takes 3 or 4 years to determine the actual life of a gear. When asked how the Durable gear had been applied, he said that "some had been applied on foreign cars and some on our own."

On the Missouri-Kansas-Texas, it developed that Swift & Co. had dealt directly with the vice-president of traffic in promoting the sale for the Mechanical Manufacturing Company. G. E. Scott, purchasing agent, stated that neither the Mechanical Manufacturing Company nor Swift & Co. had endeavored to interest him in their products since Swift & Co. had disclosed its interest in the other company and stated he had acted on a request from the vice-president of traffic and that his purchases were confined to five sets.

### Hearing at Omaha

The hearing at Omaha was opened with testimony from Harold Wilson, assistant general purchasing agent of the Union Pacific, who appeared in the absence of the general purchasing agent. He testified that negotiations for the purchase of the draft gear of the Mechanical Manufacturing Company had started with letters from Swift & Co. to the vice-president in charge of traffic. Consideration was given to the draft gear and it was decided to purchase a test quantity. The purchasing agent at Portland, Ore., was instructed to purchase the gears and they were applied in Oregon as a service test. The witness said that they were bought at the price of $65 a set, f. o. b. Chicago, and shipped to Portland for this purpose. No laboratory test was made, he said, but he added that it is not customary on that road to make such tests of draft gear. He testified that other makes of draft gear are in service for this purpose and, when asked if in all instances as many as 100 (gear) were ordered for a service test, he said, "No, I think in some cases we have put on as few as 50 gear, or 25 sets." He explained that the draft gear purchased was put on repaired cars, in line with the usual practice when making service tests.

At this point Mr. Wilson was asked if it was not the custom to invite manufacturers to submit bids when they were in the market for an article, to which the witness answered, "Always." He also stated that it had been decided during 1929 to test 50 sets of another type of gear as well as 50 sets of the Durable. The Commission's lawyer then asked if bids had been presented for the Durable gear and received the reply that "they had not," the explanation being that these gears had been bought for test purposes. When asked if he knew of any other draft gear that had been purchased by the Union Pacific through solicitation reaching the purchasing department through the traffic department of the railway, he said, "No, I do not."

Gentry Waldo, assistant freight traffic manager of the Union Pacific, appeared in the absence of F. W. Robinson, vice-president of traffic, and presented letters in which Swift & Co. had solicited the vice-president of traffic for purchases from the Mechanical Manufacturing Company and other correspondence relating to these negotiations, including letters in which the Swift interest was made known to the president of the road and to the vice-president in charge of purchases. He testified that the Union Pacific received traffic from Swift & Co., but did not recall the volume.

### Failure to Buy Causes Reprisal

It was brought out in further hearing at St. Paul, Minn., on Tuesday, February 25, that traffic officers of Swift & Company had solicited the Northern Pacific and the Soo Line to buy the draft gear of the Mechanical Manufacturing Company. A letter was introduced from R. O'Hara, addressed to J. G. Woodworth, vice-president, traffic, Northern Pacific, which was almost identical with that received by L. W. Baldwin, president of the Missouri Pacific, and quoted above.

Letters were also introduced from W. A. Mayfield, assistant traffic manager of Swift & Company, Chicago, and Mr. Jones, traffic officer of Swift & Co., at South St. Paul, giving the volume of Swift traffic over that road and pressing for action on the gear. L. R. Capron, freight traffic manager of the Northern Pacific, testified that these Swift officers also talked with him subsequently about reciprocity and urged purchase of their gear for new equipment planned by the Northern Pacific.

Silas Zwight, general mechanical superintendent of the Northern Pacific, testified that he investigated the gear three times. The first time he reported that the gear had not been in service long enough to determine its life and upkeep and that he could not recommend it. A subsequent investigation by his expert at the factory did not change his opinion. He later approved purchasing ten sets for a service test. He again sent his expert to the factory to investigate improvements reported to have been made and again filed an adverse report. He said that inspections of the test gear since their application have not changed his opinion, one of two sets examined having broken loose. H. J. Hennessy, chief draftsman, Northern Pacific, who investigated the gear at the factory, stated he found that only six gear had been applied to Swift's own cars up to 1929 and that the number so applied up to March, 1929, was seventy.

Mr. Capron told the traffic manager of the Swift plant at St. Paul in April that he could advise his people definitely that the Northern Pacific did not put the gear on the new equipment planned. Counsel for the Federal Trade Commission then referred both R. W. Clark, general traffic manager, Northern Pacific, and

Mr. Capron to letters received by Mr. Capron from Northern Pacific freight agents, and drew testimony from them purporting to show that certain westbound traffic from Kalamazoo, Mich., and certain eastbound business from Seattle, Wash., and Aberdeen and Portland, Ore., controlled by the packers, had been withdrawn because of its failure to buy more gear.

F. R. Newman, vice-president, traffic, Soo Line, testified that as a result of conversation and letters from W. A. Mayfield, his road investigated the gear, but decided to buy only five sets for test. Mr. Newman testified further that these gears cost more than other gears bought by the road. E. J. Robertson, superintendent car department, Soo Line, stated that the trial gears were applied to new cars and locomotive tenders and that one of two gears examined had to be replaced after four and a half months' service. He said breakage in so short a time was unusual.

Reference was again made at Chicago on Wednesday to the negotiations of Swift & Company with the Rock Island for draft gear. J. E. Gorman, president of the Rock Island, submitted a letter from R. O'Hara which was also similar to the letter to L. W. Baldwin already referred to. He testified that he subsequently wrote Mr. O'Hara enclosing a digest of a report of an investigation made by the general superintendent of motive power containing criticisms of the gear and expressing the latter's opinion that the small number of gears applied at that time and the short period of their service were not considered sufficient to enable them to form conclusions. Mr. Gorman testified further that he received a reply from Mr. O'Hara on February 9, 1929, stating that Swift & Company are equipping all their cars with the Durable draft gear and that all renewals will be made with Durable gear. He stated that he had authorized the purchase of gears and then asked to make a statement saying "I want to take all the responsibility for the officers of the Rock Island. I am a great believer in reciprocity. This man (R. O'Hara) routes the business and we fare very well."

A. Mackenzie, vice-president of traffic, Rock Island, testified to conversations with Mr. O'Hara and Mr. Mayfield and stated that the Rock Island bought 1050 gears. L. A. Richardson, general superintendent of motive power, Rock Island, testified that he had an inspection of the gear made at the factory and submitted a report in which the criticisms and opinions mentioned by Mr. Gorman were contained. He also testified that a test was subsequently made in the Rock Island laboratory after the gear had been bought. G. S. Goodwin, assistant to the general superintendent of motive power of the Rock Island, testified that he had inspected the gear at the factory in December, 1928, at which time it had only been applied to four Swift cars and there were some criticisms of the gear as then constructed. When asked by counsel for the respondent if other tests were made before the gear were purchased he said, "No."

W. G. Bierd, receiver, Chicago & Alton, testified to have received letters from R. O'Hara of Swift & Company about its draft gear and then stated that "Reciprocity is just as fixed and just as definite as any principle in business." He also testified that scarcely a day goes by but that letters are received from shippers reporting the business routed over the Chicago & Alton and requesting business in return. When asked if he meant that he was not in sympathy with attempts to stop the practice he stated that he was not in sympathy with undue influence, but believed that a fair exchange of business is a spur to business. The hearing was adjourned to convene in Detroit on February 27.

# I. C. C. Consolidation Procedure

WASHINGTON, D. C.

ALTHOUGH the Interstate Commerce Commission has continued since the promulgation of its consolidation plan to deal with applications by railroads for authority to acquire control under paragraph 2 of section 5 of the interstate commerce act, Director Mahaffie of its Bureau of Finance has informed the New York, Chicago & St. Louis and the Pittsburgh & West Virginia, whose applications for authority to acquire control of the Wheeling & Lake Erie come up for hearing on March 10, that they will be expected to present evidence of the same character, so far as practicable, as that required in proceedings involving actual consolidation under paragraph 6 of section 5. This information varies in some particulars from that required on applications under paragraph 2 and the nature of such information required was recently set forth in an addition to the commission's rules of practice.

Particularly, information responsive to the new rules would require the Pittsburgh & West Virginia to disclose at the hearing something as to its relation, if any, to the Pennroad Corporation, which has been reported as having acquired a majority of its stock. An effort was made by commissioners at a hearing last year to obtain information on that point but without eliciting a very specific statement. Director Mahaffie in his letter also emphasized the matter of intercorporate relationships, saying: "It is requested that the applicant in the pending proceedings be prepared to furnish for the record at the hearing all information called for in the aforesaid instructions so far as applicable to the present proceeding, particularly that called for in subdivision (o) relating to intercorporate relationships, etc., of all the carriers involved, subdivision (p) relating to common directors or officers, and subdivision (r) relating to the effect of the proposed control upon public interest. It is assumed that the applicant will also be prepared to furnish information called for in subdivision (i) relating to manner of acquisition."

"It is assumed," Director Mahaffie also said, "that the control sought to be exercised through approval of this application is intended to be permanent, and that the applicant has in contemplation a further application looking to ultimate consolidation of the properties of the applicant and of these companies in the same system." The P. & W. V. and the W. & L. E. were allocated in the plan to the Wabash.

In a letter to the Wabash relating to its application filed last year under paragraph 2 of section 5 Director Mahaffie also enclosed and called attention to a copy of the new rules for consolidation procedure. W. H. Williams, chairman of the Wabash, asked that the old application be not withdrawn but kept on the docket with a view to its later amendment. The Baltimore & Ohio has since withdrawn its old application.

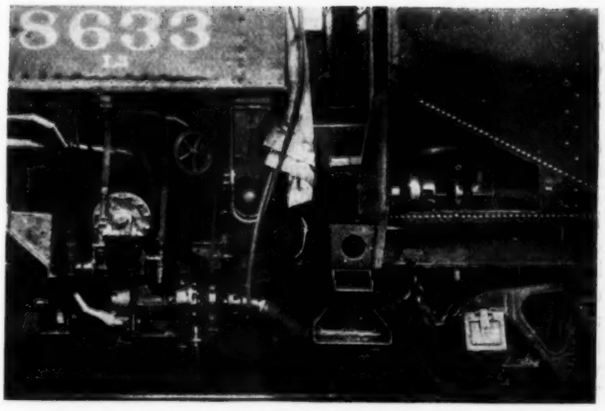
There has been much discussion since the promulgation of the consolidation plan in December as to the effect that the new status would have on applications under paragraph 2. Some of the drafts of proposed amendments to the consolidation law have proposed to repeal that paragraph, which was originally intended as an interim provision pending the completion of the plan. The commission since the first of the year has acted upon several applications under paragraph 2 and has assigned others for hearing, but Director Mahaffie's letter would seem to indicate that the commission is giving some attention to the question as to how far it should go in authorizing acquisitions of control in important cases without assurance as to whether they are intended as preliminary to actual consolidation.

# The Locomotive Water Conditioner

IN the illustrations is shown a device designated by the builders as the Locomotive Water Conditioner which is designed jointly to preheat feedwater to the atmospheric boiling point and to settle out free mud and hardness impurities before the water is delivered to the boiler. The device, built by the Bird-Archer Company, Chicago, Ill., combines the principal features and necessary apparatus of the chemical feedwater plant and the feedwater heater, installing the former as well as the latter on the locomotive and placing them under the jurisdiction of those responsible for locomotive performance.

The device has been in operation for approximately one year on the Chicago, Milwaukee, St. Paul & Pacific. It has proved successful and the equipment involved is said to have cost less and to be less complicated than that required for either the treatment of water or for the preheating of feedwater, taken singly. It is anticipated that the equipment ultimately required for the combination of these two functions may be installed for approximately $2,500 per locomotive. The device has been operated without extra labor costs other than ordinary maintenance and the cost of the chemicals required for the treatment of the water evaporated, the cost of the latter being five cents per 1,000 gal. Owing to the fact that the water is treated on the tender, there is no waste of chemicals through the diversion of treated water from wayside tanks.

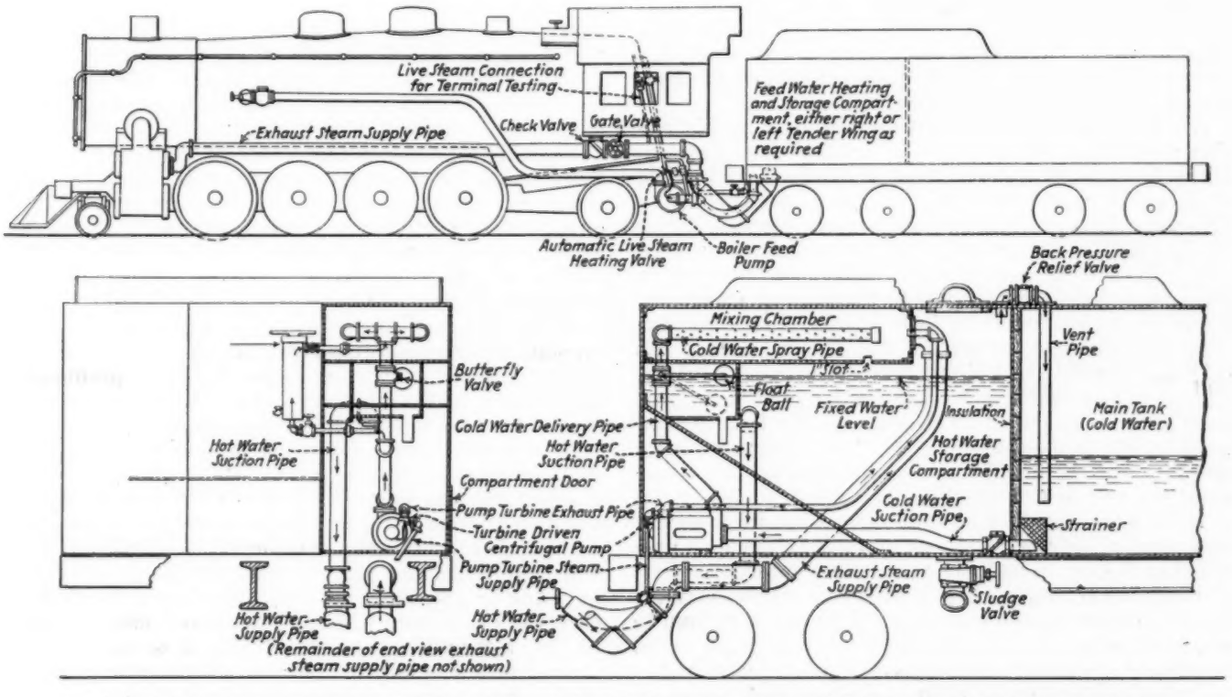
As seen from the diagrammatic sketch of the apparatus, the left water leg of the tank is partitioned off from the rest of the tender so as to provide a hot-water storage tank and mixing chamber for the cold water supply and the exhaust steam. Water is taken from the main tank through a strainer and lifted by a centrifugal pump




**The Boiler Feed Pump and Cold Water Pump Arrangement**

mounted on the tender to the mixing chamber where it is sprayed through two perforated pipes. Exhaust steam from the cylinders and auxiliaries passes through an oil separator and is automatically fed back through combining tubes to the mixing chamber until the temperature in the heater compartment has reached the atmospheric boiling point, at which point a back pressure develops, preventing the access of additional steam. The heated water and surplus steam passes through the bottom plate of the mixing chamber, which is slotted, the water filling the storage tank to a predetermined level that is controlled by a butterfly float valve in the cold water delivery line. The surplus steam is condensed after passing through a vent pipe into the main tank.

The water for the boiler feed pump is taken from a point considerably below the surface of the hot water in the storage compartment, thus allowing a reserve supply of hot water to be used at such times as the main engine may not be working, and preventing the use of cold water at all times.




**The Piping Arrangement and the Details of the Feedwater Heater and Water Conditioning Apparatus**

A boiler feed pump, located under the locomotive deck, is arranged, by automatic control, to operate only when the water has been heated to a predetermined temperature.

The chemical treating apparatus is also located on the left water leg of the tank, at the coal gate. It consists of a cylindrical container fitted with a cap and is connected to the cold water delivery pipe as shown in the drawing. This container is filled with briquettes of necessary chemical composition which are dissolved by the passage of the water through the container and carried into the mixing chamber. The cold water, under the control of the float valve and carrying the required chemical solution, is sprayed in contact with the steam in the manner described above. The chemical reaction takes place as the water is heated, resulting in many of the hard, scale-forming impurities being settled out in the storage tank before being delivered to the boiler. These hardness impurities, together with free mud, are deposited in the bottom of the storage tank and are discharged at engine terminals at the end of each run.

# Revised Motor Coach Bill Ordered Reported

WASHINGTON, D. C.

THE new function of regulating the transportation of persons in interstate and foreign commerce by motor carriers operating on public highways, with some assistance from state boards, would be added to the duties and powers of the Interstate Commerce Commission by the terms of the revised Parker bill as finally approved by the House committee on interstate and foreign commerce on February 25. The committee then ordered a favorable report on the bill and it is expected that it will be brought up for consideration in the House under a special rule on March 4. Prospects for action on the bill by the Senate at this session, however, are said by leaders of that body to be far from bright, as the committee on interstate commerce has been devoting its attention to other matters and the Senate itself has fallen far behind with its work.

After extensive hearings on the bill, both at this session and last session, it was understood that the committee had practically completed its work on the bill last week and it was introduced in the revised form by Chairman Parker of the committee on February 22 as H. R. 10,202. At a meeting of the committee on February 25, however, some additional important changes were made in the language which reduce the effect of the findings to be made by joint boards of state authorities to recommendations to the federal board. As originally drawn the bill proposed to leave most of the administrative work under the bill to joint boards of state commissioners acting as agents of the federal commission, but as the discussion on it has progressed more and more of the detail has been imposed on the Interstate Commerce Commission.

It is made the duty of the commission to supervise and regulate common carriers by motor vehicle as provided in the act, to be known as the Federal Motor Carrier Act, 1930, and to that end the commission may establish reasonable requirements with respect to continuous and adequate service at just and reasonable rates, a uniform system of accounts and reports, qualifications and maximum hours of service of employees, safety of operation and equipment, comfort of passengers, and pick-up and delivery points whether on regular routes or within defined localities or districts.

Except in case of a matter required to be referred to a joint board, any particular matter or class of matters arising under the administration of the act may be heard and decided by the commission, or may, by order of the commission, be referred for hearing to any member or examiner of the commission, who shall recommend appropriate order thereon. As introduced on February 22 the bill provided that the commissioner or examiner might make the order, without recommendation to the commission, and the commission has been seeking similar authority to delegate matters under the interstate commerce to individual commissioners or examiners, but at the meeting on February 25 this was changed. However, any recommended order is to be filed with the commission and would become effective unless within ten days it is stayed or postponed by the commission. An application in writing for a review may also be made to the commission, which shall decide the matter and make appropriate order.

Provision for joint boards is made only when operations between two states only are involved. The commission is directed to refer to such boards matters with respect to certificates of public convenience and necessity, applications for the approval and authorization of consolidations, mergers and acquisitions of control, complaints as to rates, fares and charges, approval of surety bonds, etc. In acting upon such matters joint boards shall make recommendations to the commission which shall become effective and shall be subject to review by the commission, in the same manner as provided in the case of members or examiners of the commission.

Whenever a matter required to be referred to a joint board arises, the commission shall create such a board consisting of a member from each state involved, appointed by it from nominees of the state regulatory commissions or the governors.

Carriers by motor vehicle in interstate or foreign commerce on any public highway are forbidden to operate without a certificate of public convenience and necessity, except for a period of 90 days after the passage of the Federal Motor Carrier Act, 1930, if application for a certificate is made within that period, but if the commission finds that it was in bona fide operation on January 1, 1930, it may be granted a certificate upon application without further proceedings.

There is a provision that "nothing contained in section 500 of the transportation act, 1920, shall be construed as expressing a preference by Congress for rail or water transportation over transportation by motor vehicle or to affect in any manner the issuance of a certificate of public convenience and necessity under the provisions of this act; and nothing contained in this act shall be construed as a declaration by Congress of the relative importance to the public of the several kinds of transportation." The commission is directed in the administration of the act, to preserve competition in service "so far as consistent with the public interest."

Provision is made for requirements that operators shall observe published tariff rates, which may be changed only on thirty days' notice. Any person, corporation or state board may make complaint to the commission that rates are or will be unjust or unreasonable and if it is decided that the rate or charge is or will be unjust or unreasonable "an appropriate order shall be issued in conformity with such decision." No rate may be held to be unjust or unreasonable, however, "on the ground that it is unjust to a competing carrier engaged in a different kind of transportation."

# Looking Backward

## Fifty Years Ago

One of the most important of the many recent consolidations is that just effected by the amalgamation of the Chicago, St. Paul & Minneapolis, the St. Paul & Sioux City and the North Wisconsin, under the title of the Chicago, St. Paul. Minneapolis & Omaha. The consolidated system now has a mileage of more than 700, with about 200 miles in the process of construction.—*Railway Age,* March 4, 1880.

A report submitted to the United States Senate by the acting commissioner of the land office shows that land grants to 16 railroads and comprising a total of 99,302,000 acres, have lapsed through failure of the companies to perform the acts required by their charters. In the case of the largest of these grants—to the Northern Pacific and the Atlantic & Pacific [now part of the Atchison, Topeka & Santa Fe], aggregating 83,000,000 acres—it is not considered that they are subject to forefeiture through omission from the charter of a clause which would make them revert back to the United States within a certain specified time.—*Railroad Gazette,* February 27, 1880.

## Twenty-Five Years Ago

The legislature of Indiana has passed a law to establish a state railroad commission. Three commissioners are to be appointed by the governor and the board is to have the power to correct rates which are formally complained of.—*Railroad Gazette,* March 3, 1905.

The Stuyvesant docks, the extensive export freight terminal of the Illinois Central at New Orleans, were almost completely destroyed by fire on the night of February 26, entailing a loss of about $5,000,000 and interfering temporarily with the export business of New Orleans.—*Railway Age,* March 3, 1905.

J. W. Higgins, inspector of transportation of the Missouri Pacific, has been appointed assistant to the general manager, with office at St. Louis. F. B. Houghton, heretofore assistant general freight agent of the Atchison, Topeka & Santa Fe at San Francisco, has been appointed assistant freight traffic manager of the system at Chicago. A. E. Clift, heretofore trainmaster on the Illinois Central at Kankakee, Ill., has been promoted to superintendent at Freeport, Ill. Harry R. Talcott, assistant engineer of the Baltimore & Ohio at Cumberland, Md., has been appointed engineer of surveys of Baltimore. —*Railway Age,* March 3, 1905.

## Ten Years Ago

James M. Kurn, formerly vice-president in charge of operation and construction of the St. Louis-San Francisco, has been elected president.—*Railway Age,* February 27, 1920.

Charging that because of discrimination in the distribution of coal cars they have suffered losses ranging from $8,000,000 to $10,000,000, mine operators along the Louisville & Nashville in the Tennessee-Kentucky coal field are threatening to sue the Railroad Administration for redress.—*Railway Age,* February 27, 1920.

The conference report on the Esch-Cummins bill was adopted without change by the House of Representatives on February 21 and by the Senate on February 23, by larger majorities and with less vigorous opposition than had been expected. The bill was passed by a vote of 250 to 150 in the House after five hours of debate and in the Senate by a vote of 47 to 17 after a similar period of discussion. About 2,800 delegates and general chairmen of the 15 railway labor organizations that have demanded general wage increases from the Railroad Administration met at Washington on February 23 and decided to send a memorial to President Wilson asking him to veto the bill.—*Railway Age,* February 27, 1920.

# New Books

## Books and Articles of Special Interest to Railroaders

*(Compiled by Elizabeth Cullen, Reference Librarian)*
*Bureau of Railway Economics, Washington, D. C.)*

### Books and Pamphlets

*Business and the Railroads,* by A. J. Ewing. "The business interests and the railroads of this country are so closely related and necessary to each other that a discussion emphasizing the need of team work between them for the general welfar and prosperity of the country may not be out of place, even though both subjects have been written about numerous times from many angles." (p. 3). 28 p. Available from Author, Wichita, Kansas. 20 cents per copy in lots of 10 to 100.

*Current Research in Law for the Academic Year 1928-1929,* by Marion J. Harron. Based on a survey made by the Institute of Law, Johns Hopkins University, the studies listed on pages 160-162 under "Railroads—Rates, Valuation," and some of the studies under the following "Administrative Law and Public Administration," "Aerial Navigation," "Carriers," "Industrial Relations," "Interstate Commerce," "Motor Vehicles," "Public Utilities and Public Service," "Taxation," "Waterways and Water Power" and "Zoning" may be of interest. The studies are noted as completed, in progress, or when expected to be completed. 218 p. Pub. by Johns Hopkins Press, Baltimore, Md. $2.

*The Principles of Transportation,* by C. L. Chiu. "This book is written from the Chinese point of view for two main purposes. First, it is intended to enable our students to study the general principles of transportation in China in the most convenient way. Second, it enables them to make a comparative study of the world's principal transportation systems and their service intelligently. (p. vii). A list of Chinese railroads, organization charts of two Chinese railways and reproduction of forms used in railway freight service and in Chinese railway accounts are included in the appendices, as well as a statement of foreign debts of Chinese railways as of January, 1923. 278 p. Pub. by the Commercial Press, Ltd., Shanghai, China.

### Periodical Articles

*British and Foreign Rolling Stock Compared,* by C. E. R. Sherrington. "It would seem that the passenger coach rather than the passenger train is the better statistical unit from which to start a study, and the following figures refer to specimens of the recent products of the carriage builder's craft put into service on our own and certain railways abroad. Third class accommodation alone has been considered and taken as equivalent to day-coach travel in the United States, and second class travel on continental railways. . ." p. 181. Number of seats, tons, and weight per seat in pounds are given for equipment of the four British, six large French, and the following United States railroads: Burlington, Erie, Pennsylvania, Pittsburgh & Lake Erie, and Southern Pacific. Average haul per passenger is given for Gt. Britain, Germany, France, Belgium, Canada and the United States. (p. 181). Journal of the Institute of Transport, February 1930, p. 180-184.

*Electrification of the Curityba-Paranagua Railway Line,* by C. R. Cameron. Brief history of line and reasons for electrification are given. Commerce Reports, February 24, 1930, p. 537-538.

*Faith in Statistics,* by R. Bell. Early and modern transport statistics reviewed as well as general trade statistics useful to railroaders. "Statistics and social economics," the operating efficiency of American railroads, and the work of the Car Service Division, are discussed along with British statistics and achievements. Journal of the Institute of Transport, February 1930, p. 171-179.

# *Odds and Ends of Railroading*

### "East Side, West Side"

When you leave New Orleans on the Texas & Pacific you may take your choice of directions, for, a few miles apart, there are two stations, one named East-we-go, the other West-we-go.

### No Buck Fever

J. G. Ayers, blacksmith foreman of the Southern Pacific of Brooklyn, Ore., claims the railway deer shooting championship for this season. He bagged a 300-lb. stag at 325 yd., in the Black Mountains in eastern Oregon. The buck had a spread of 24 in.

### Thirteen!

To other people, 13 may seem unlucky, but to railway men it's just another number. For example, on Friday, September 13, train No. 13, on the Buffalo, Rochester & Pittsburgh, received meet order No. 13. On August 13, Rock Island train 13 pulled out of LaSalle Street Station on track 13, with engine 4013.

### Another Model Fan

William Gillette, eminent actor, who is now playing a farewell tour of the United States in "Sherlock Holmes," is one of the few people in the world who possesses his own railroad. Mr. Gillette planned, designed and built the several miles of railroad which traverses his estate in Connecticut and acts as engineer, fireman and, on occasion, conductor.

### Film Star Doubles

Two Illinois Central girls have won prizes in a contest conducted by a Chicago newspaper for their close resemblance to popular film stars. Mildred Owen, stenographer in the transportation office, was awarded $50 for her resemblance to Norma Shearer, while Libby Collins, laboratory technician in the hospital department, got the same amount for looking like Vilma Banky.

### Self-Starting Baggage

A pigeon fancier, who had been exhibiting at the Stirling Fur and Feather Society's show and was returning home with his stock, was stopped at the platform gate when he attempted to get through with a basket of birds for which he had not bought the appropriate excess baggage ticket. He was unyielding, declaring that he had paid no excess when he came, and that he intended to pay nothing on the return journey.

The ticket collector was adamant, but he had a dour and canny Scot to reckon with. "Weel, I'll no pay ye," declared the fancier, "the doos (pigeons) can find their way hame as best they can." Suiting the action to the word, he marched to the station entrance, and opening the basket, liberated his homers, who, after the customary circling flight, headed for the north, in which direction their owner resided.—Railway Gazette, (London), reprinted from Daily Herald.

### Father and Son Pensioners

An event believed to be unique in railroad service occurred recently, when a son became a pensioner of the New York Central, five more than his father, who served at both Buffalo The son is W. J. Balcom, 70, and the father is M. A. Balcom, 89. The son has had 55 years' service with the New York Central, five more than his father, who served at both Buffalo and Brocton, N. Y., as a car inspector. When he retired at 70, the younger Balcom was a chief clerk, at Brocton, a position to which he was appointed in 1880. All of his service was in this town of about 1,500 population. He started working for the New York Central, under his father's supervision, at the age of 15. The elder Balcom entered the service of the old Buffalo & Erie in 1864, as a car repairer. Three years later he was transferred to Brocton as a car inspector, filling this position until 1914, when he was retired. Both father and son are hale and hearty and plan frequent trips on the railroad which they served so long.

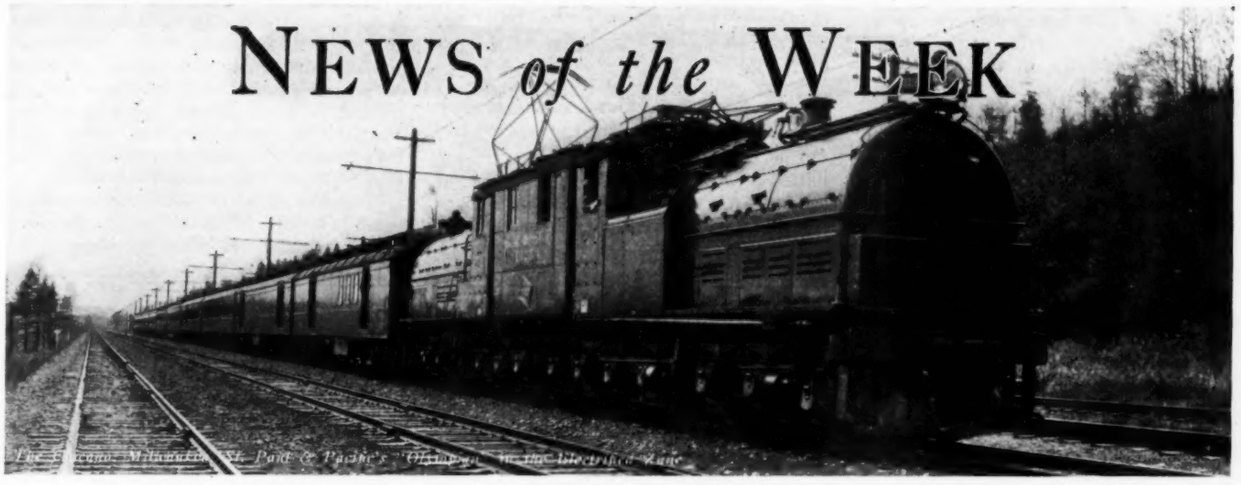
### Persistent Beavers

A beaver colony and dam alongside the Pennsylvania tracks, near Rathbun, Pa., believed unequalled anywhere in the nation, was removed to another spot in the state by the game warden recently. These beavers worked at the dam for two years until it became so large that it started flooding the right of way of the railroad. The water had backed up for several hundred feet and in some places was over six feet deep. It was fed by a small spring. While the beavers lived at Rathbun, the trains thundering by their home did not seem to disturb them. It is very rare for these animals to settle so close to civilization. They work in the night time, cutting down small trees with their teeth, to form the dam, and are seldom seen by human beings. It was thought that the troubles were over, but, a few weeks later the wires between Rathbun and Emporium went out. A maintainer discovered that some new beavers had arrived and started another dam. One of the beavers had felled a tree, which had fallen against the wires and put them out of commission.

### A Campaigning Railroader

After only the most cursory glance at the details of the career of General John A. Hulen, recently elected vice-president of the Fort Worth & Denver City and the Wichita Valley, we enter, without the slightest hesitation, this Texan in the stiffest competition for railroaders with a lengthy military service. Mr. Hulen has taken part in four major military campaigns in which the United States has been engaged, not to mention the host of "Red" and "Blue" army manoeuvres in which he has participated as an officer of the Texas National Guard. He began his military service at the age of 18 as a lieutenant in the National Guard after attendance at two military academies, Staunton and Marmaduke. Following that peace-time enlistment, he was advanced as first lieutenant, Company G, Third Texas Infantry; captain, Troop D, First Texas Cavalry, Major, First Texas Cavalry; major, First Texas Cavalry, United States Volunteers in the Spanish-American War and lieutenant-colonel of the same regiment. That record of service only carries him to the end of the Spanish-American war. Then came the Philippine Insurrection where he served for three more years as captain of the Thirty-third United States Volunteers Infantry. For four years Mr. Hulen was adjutant-general of Texas and from 1907 to 1916 he was affiliated with the National Guard with the rank of brigadier-general, retired. This inaction, figuratively speaking, during which he was engaged in railway service, came to an end on May 1, 1916, when he resumed active duty as brigadier-general of the National Guard. Several days later he entered the federal service in command of Texas troops, the Sixth Separate Brigade, on the Mexican border. This was followed by active service in organizing the Texas quota to complete the Thirty-sixth division at the outbreak of the World war. He was then appointed brigadier-general, United States Army, commanding the Seventy-second Brigade, Thirty-sixth Division, remaining with that unit during all of its training service in the United States and its field service in France. Mr. Hulen's lengthy service has not been without its reward. He was awarded a silver star for gallantry in action during the Philippine Insurection in 1899, the French Croix de Guerre on two citations for service in the early part of October, 1918, in the Champagne offensive, and the United States Distinguished Service Medal for distinguished service in the Meuse Argonne offensive of October, 1918.

# NEWS *of the* WEEK



THE CANADIAN RAILWAY CLUB will hold its next meeting on Monday evening, March 10, at the Windsor Hotel, Montreal. The speaker will be Judge Monet.

THE CAR FOREMEN'S ASSOCIATION OF CHICAGO will hold its next meeting on Monday evening, March 10, at the Great Northern Hotel. The discussion will be on the A. R. A. Interchange Rules.

THE CLEVELAND RAILWAY CLUB will hold its next meeting on Monday evening, March 3, at the Hotel Hollenden. The speaker will be M. E. Fitzgerald, general car inspector of the Chicago & Eastern Illinois, and the subject will be improper loading of open-top cars.

THE EASTERN CAR FOREMAN'S ASSOCIATION will hold its next meeting at 29 West Thirty-Ninth Street, New York, N. Y., Room 502, on Friday evening, March 28. William H. Tucker of the Vapor Car Heating Company will speak on the heating of long trains.

THE PACIFIC RAILWAY CLUB will hold its next meeting at the Elks' Club, San Francisco, Cal., on Thursday, March 13, at 6:30 p.m. This will be the thirteenth annual meeting and banquet, and the principal speaker will be A. J. Lundberg, president of the Key System Transit Company.

THE OFFICES of the Cleveland, Cincinnati, Chicago & St. Louis at Indianapolis, Ind., now in the Majestic building at 47 South Pennsylvania Street, will on April 1 be moved to the Big Four building at Meridian and Maryland Streets. The railroad will occupy all but the first two floors of the nine-story building.

THE GENERAL OFFICES of the American Railway Association at Chicago, which are now at 431 South Dearborn street, will on April 1 be moved to the twenty-second and twenty-third floors of the Buckingham building on Van Buren street, between Michigan and Wabash avenues.

THE WESTERN RAILWAY CLUB will hold its next meeting at the Hotel Sherman, Chicago, on Monday evening, March 17. The speaker of the evening will be George H. Houston, president of the Baldwin Locomotive Works and there will also be vaudeville entertainment, some of it by members of the railway supply fraternity.

THE EDITORIAL in the *Railway Age* of February 15, entitled "Reciprocal Buying and Self-Regulation of Industry," was published in the Congressional Record of February 20 as an "extension of remarks" by Senator Brookhart, of Iowa, who had proposed a Senate investigation of reciprocal buying. "This is the first time that paper has ever published anything favorable to anything I ever did," he said, "although it condemns me as strongly as it did before."

## Damages for Lost Coal Based on Value at Point of Shipment

Loss by a railroad of part of a carload of coal in transit entitles the owner to recover damages measured by the wholesale value of the coal in the car at destination, and not by a retail value which might have been obtained, the Supreme Court of the United States held on February 24 in reversing a decision of the circuit court of appeals for the eighth circuit in Illinois Central versus G. I. Crail, etc. The court said that the loss was capable of replacement and was, in fact, replaced by purchases made in carload lots at wholesale market price without added expense.

## Federal Courts Without Jurisdiction in Piedmont & Northern Case

The Supreme Court of the United States on February 24 directed the district court for the western district of North Carolina to dismiss for want of jurisdiction a bill filed on behalf of the Piedmont & Northern for an injunction against an order of the Interstate Commerce Commission which had denied the application for a certificate for the construction of two extensions of 128 miles in North and South Carolina. The commission had taken jurisdiction of the case, although the line is operated by electricity, over the objection of the applicant that it was exempt because electric. The Supreme Court held that the order of the commission being negative, infringed no right of the railway, and that if, as is contended, the commission was without jurisdiction, the railway is as free to proceed with the construction as if the application had not been made and the commission had not acted; although "the action taken by the commission may lend greater justification to the railway's fear of the uncertainty instinct in the prophecy as to whether it will be held to be an interurban electric within the meaning of paragraph 22."

## Southern New England Option Granted by Canadian National

Sir Henry Thornton, chairman and president of the Canadian National, announced on February 20 that an option had been given for the purchase of the properties of the Southern New England, the line between Palmer, Mass., and Providence, R. I., upon which the Grand Trunk discontinued work several years ago.

As was announced in the *Railway Age* of January 11, sentiment has recently developed in Rhode Island and Massachusetts favoring the completion of the construction of the long-abandoned line and a movement is now before the Massachusetts legislature to extend its charter. The statement of Sir Henry Thornton in connection with the granting of the option is as follows:

"The Canadian National Railways, successor to the Grand Trunk, has given an option for the purchase of the Southern New England Railway properties between Palmer, Mass., and Providence, R. I. The administration of the Canadian National Railways has received no proposals whatsoever for the purchase of the Central Vermont Railway, and at the present time has no intention of parting with that property.

"The project to construct the Southern New England was definitely abandoned by the Grand Trunk, and the Canadian National System has not changed that policy. The Southern New England is now in receivership, and is being liquidated for all the creditors, of which the

Central Vermont Railway is one. The right of way and other property is for sale, and all matters relating thereto are under the jurisdiction of the court."

The reports to which Sir Henry Thornton's statement referred were to the effect that arrangements had been completed by New England capitalists to finance a deal by which the present properties of the Southern New England would be purchased from the Canadian National and the line completed to a New England port, giving a direct route to Canada by connecting with the Central Vermont, a subsidiary of the C. N. R.

## More Money Asked for Rivers and Harbors

The President on February 21 transmitted to Congress a supplemental estimate of the Bureau of the Budget for $12,000,000 additional appropriation for maintenance and improvements of rivers and harbors for the current fiscal year, accompanied by a statement that unless money is provided there will be a drastic reduction in the amount of work on projects under way and thousands of persons will be thrown out of employment. The estimate was made on recommendation of the Secretary of War, who said that as a result of the effort to expedite work since the stock market crash the expenditures during the last six months of 1929 had averaged over

## Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 180 Steam Railways, Including 16 Switching and Terminal Companies

FOR THE MONTH OF DECEMBER, 1929 AND 1928

| Item | United States | | Eastern District | | Southern District | | Western District | |
|---|---|---|---|---|---|---|---|---|
| | 1929 | 1928 | 1929 | 1928 | 1929 | 1928 | 1929 | 1928 |
| Average number of miles operated | 241,978.31 | 241,627.56 | 60,191.99 | 60,086.43 | 45,775.82 | 45,754.54 | 136,010.50 | 135,786.59 |
| Revenues: | | | | | | | | |
| Freight | $340,820,880 | $368,125,512 | $147,781,187 | $159,711,995 | $64,536,672 | $68,050,382 | $128,503,021 | $140,363,135 |
| Passenger | a 74,438,261 | b 76,661,478 | 39,949,150 | 40,165,568 | 10,715,923 | 11,350,846 | 23,773,188 | 25,145,064 |
| Mail | c 15,800,397 | 12,066,664 | 6,503,003 | 4,770,062 | 2,085,336 | 1,861,822 | 7,212,058 | 5,434,780 |
| Express | 12,048,131 | 13,796,869 | 4,810,303 | 6,250,725 | 2,062,395 | 2,101,592 | 5,175,433 | 5,444,552 |
| All other transportat'n | 15,102.616 | 16,716,060 | 8,469,772 | 9,249,636 | 1,294,414 | 1,245,234 | 5,338,430 | 6,221,190 |
| Incidental | 9,817,632 | 9,776,137 | 5,054,172 | 5,335,807 | 1,715,467 | 1,318,701 | 3,347,993 | 3,121,629 |
| Joint facility—Cr. | 1,197,174 | d 59,667 | 356,711 | d 738,445 | 198,658 | 156,108 | 641,805 | 522,670 |
| Joint facility—Dr. | 346,131 | 316,930 | 91,321 | 96,058 | 41,218 | 30,595 | 213,592 | 190,277 |
| Railway operating revenues | 468,878,960 | 496,766,123 | 212,832,977 | 224,649,290 | 82,267,647 | 86,054,090 | 173,778,336 | 186,062,743 |
| Expenses: | | | | | | | | |
| Maintenance of way and structures | 60,063,355 | 61,567,560 | 26,591,311 | 24,470,824 | 10,344,838 | 10,723,236 | 23,127,206 | 26,373,500 |
| Maintenance of equipment | 98,280,465 | 95,811,975 | 46,402,579 | 45,737,792 | 17,158,549 | 16,065,583 | 34,719,337 | 34,008,600 |
| Traffic | 11,154,704 | 10,426,810 | 4,273,046 | 3,895,258 | 2,059,213 | 2,155,271 | 4,822,445 | 4,376,281 |
| Transportation | 173,300,800 | 175,020,383 | 83,411,474 | 82,744,714 | 26,061,135 | 27,227,329 | 63,828,191 | 65,048,340 |
| Miscellaneous operat'ns | 4,866,843 | 4,545,543 | 2,355,283 | 2,275,561 | 528,841 | 493,161 | 1,982,719 | 1,776,821 |
| General | 16,987,361 | 12,610,110 | 7,608,044 | 3,520,827 | 2,765,718 | 2,706,936 | 6,613,599 | 6,382,347 |
| Transportation for investment—Cr. | 1,839,215 | 1,658,562 | 466,968 | 355,911 | 302,487 | 360,604 | 1,069,760 | 942,047 |
| Railway operating expenses | 362,814,313 | 358,323,819 | 170,174,769 | 162,289,065 | 58,615,807 | 59,010,912 | 134,023,737 | 137,023,842 |
| Net revenue from railway operations | 106,064,647 | 138,442,304 | 42,658,208 | 62,360,225 | 23,651,840 | 27,043,178 | 39,754,599 | 49,038,901 |
| Railway tax accruals | 24,399,293 | 34,982,464 | 9,289,632 | 14,645,462 | 5,318,777 | 6,488,257 | 9,790,884 | 13,848,745 |
| Uncollectible ry. revs. | 108,003 | 395,720 | d 25,369 | 286,940 | 73,519 | 38,492 | 59,853 | 70,288 |
| Railway operating income | 81,557,351 | 103,064,120 | 33,393,945 | 47,427,823 | 18,259,544 | 20,516,429 | 29,903,862 | 35,119,868 |
| Equipment rents—Dr. balance | 7,419,389 | 6,848,372 | 4,230,075 | 3,777,619 | d 254,511 | d 147,089 | 3,443,825 | 3,217,842 |
| Joint facility rent—Dr. balance | 1,910,765 | 1,524,412 | 1,002,130 | 460,235 | 116,981 | 199,011 | 791,654 | 865,166 |
| Net railway operating income | 72,227,197 | 94,691,336 | 28,161,740 | 43,189,969 | 18,397,074 | 20,464,507 | 25,668,383 | 31,036,860 |
| Ratio of expenses to revenues (per cent) | 77.38 | 72.13 | 79.96 | 72.24 | 71.25 | 68.57 | 77.12 | 73.64 |

FOR TWELVE MONTHS ENDED WITH DECEMBER, 1929 AND 1928

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Average number of miles operated | 241,854.45 | 241,300.50 | 60,182.41 | 60,083.04 | 45,765.19 | 45,720.00 | 135,906.85 | 135,497.46 |
| Revenues: | | | | | | | | |
| Freight | $4,825,786,727 | $4,698,708,149 | $2,096,920,020 | $2,018,930,714 | $851,039,810 | $833,937,237 | $1,877,826,897 | $1,845,840,198 |
| Passenger | e 873,582,447 | g 902,172,361 | 467,647,497 | 475,250,149 | 118,803,457 | 129,564,474 | 287,131,493 | 297,357,738 |
| Mail | f 151,482,848 | 104,434,660 | 61,884,234 | 40,408,674 | 22,979,550 | 17,739,367 | 66,619,064 | 46,286,619 |
| Express | 148,190,522 | 142,639,140 | 68,010,272 | 65,173,301 | 22,486,284 | 21,125,610 | 57,693,966 | 56,340,229 |
| All other transportat'n | 209,263,501 | 208,012.895 | 121,251,850 | 117,805,424 | 14,833,290 | 14,553,410 | 73,173,361 | 75,654,061 |
| Incidental | 134,213,040 | 125,909,052 | 68,024,550 | 63,730,082 | 16,291,305 | 16,249,556 | 49,897,185 | 45,929,414 |
| Joint facility—Cr. | 13,740,411 | 12,179,105 | 4,450,501 | 3,894,712 | 2,220,859 | 1,932.795 | 7,069,051 | 6,351,598 |
| Joint facility—Dr. | 3,904,663 | 4,138,173 | 991,961 | 1,286,743 | 431,093 | 430,192 | 2,481,609 | 2,421,238 |
| Railway operating revenues | 6,352,354,833 | 6,189,917,189 | 2,887,196,963 | 2,783,906,313 | 1,048,228,462 | 1,034,672,257 | 2,416,929,408 | 2,371,338,619 |
| Expenses: | | | | | | | | |
| Maintenance of way and structures | 862,701,113 | 848,313,029 | 363,663,454 | 351,478,741 | 149,022,499 | 146,270,405 | 350,015,160 | 350,563,883 |
| Maintenance of equipment | 1,211,342,962 | 1,176,032,296 | 577,074,914 | 550,463,716 | 211,795,783 | 207,561,784 | 422,472,265 | 418,006,796 |
| Traffic | 130,433,799 | 125,350,323 | 49,975,635 | 46,743,516 | 23,733,068 | 24,238,653 | 56,725,096 | 54,368,154 |
| Transportation | 2,109,519,747 | 2,101,725,638 | 1,001,429,139 | 985,528,601 | 327,394,167 | 334,432,886 | 780,696,441 | 781,764,151 |
| Miscellaneous operat'ns | 58,937,111 | 56,134,182 | 27,224,087 | 26,268,734 | 6,429.317 | 6,716.028 | 25,283,707 | 23,149,420 |
| General | 195,693,749 | 190,270,079 | 85,571,011 | 82,695,695 | 32,795,270 | 32,346,965 | 77,327,468 | 75,227,419 |
| Transportation for investment—Cr. | 14,659,647 | 15,784,231 | 3,650,624 | 2,959,536 | 1,365,036 | 1,474,833 | 9,643,987 | 11,349,862 |
| Railway operating expenses | 4,553,968,834 | 4,482,041,316 | 2,101,287,616 | 2,040,219,467 | 749,805,068 | 750,091,888 | 1,702,876,150 | 1,691,729,961 |
| Net revenue from railway operations | 1,798,385,999 | 1,707,875,873 | 785,909,347 | 743,686,846 | 298,423,394 | 284,580,369 | 714,053,258 | 679,608,658 |
| Railway tax accruals | 402,630,307 | 395,580,047 | 168,484,208 | 166,674,832 | 73,017,576 | 71,345,818 | 161,128.523 | 157,559,397 |
| Uncollectible ry. revs. | 1,171,448 | 1,590,877 | 416,488 | 883,787 | 311,311 | 245,153 | 443,649 | 461,937 |
| Railway operating income | 1,394,584,244 | 1,310,704,949 | 617,008,651 | 576,128,227 | 225,094,507 | 212,989,398 | 552,481,086 | 521,587,324 |
| Equipment rents—Dr. balance | 94,698,758 | 92,178,173 | 48,742,005 | 47,449,760 | d 3,557,344 | d 2,580,629 | 49,514,097 | 47,309,042 |
| Joint facility rent—Dr. balance | 25,111,297 | 24,038,970 | 12,654,763 | 11,795,795 | 2,330,716 | 2,165,127 | 10,125,818 | 10,078,048 |
| Net railway operating income | 1,274,774,189 | 1,194,487,806 | 555,611,883 | 516,882,672 | 226,321,135 | 213,404,900 | 492,841,171 | 464,200,234 |
| Ratio of expenses to revenues (per cent) | 71.69 | 72.41 | 72.78 | 73.29 | 71.53 | 72.50 | 70.46 | 71.34 |

*a* Includes $3,184,734 sleeping and parlor car surcharge. *b* Includes $3,112,962 sleeping and parlor car surcharge. *c* Includes approximately $3,936,002 back railway mail pay. *d* Deficit or other reverse items. *e* Includes $40,327, 523 sleeping and parlor car surcharge. *f* Includes $39,688,425 sleeping and parlor car surcharge. *g* Includes approximately $37,585,320 back railway mail pay.

*Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.*

$6,500,000 a month. The present appropriation for rivers and harbors is $50,000,000 and there was an unexpended balance from prior appropriations of $34,500,000. On January 1 the unexpended balance was $48,000,000 but $29,500,000 was obligated and most of the balance will be required to cover the cost of overhead and of work done by the Corps of Engineers directly and not by contract. The secretary gave a list of the projects on which he said the funds can be used at once to great advantage, including the work of obtaining a six-foot channel on the Missouri river and the upper Mississippi.

## A. R. E. A. Convention Program

Final details of the thirty-first annual convention of the American Railway Engineering Association have been virtually completed and a record attendance is expected. The program for the convention, which will be held at the Palmer House, Chicago, on March 11 to 13, inclusive, is as follows:

FIRST DAY—TUESDAY, MARCH 11
President's address, Louis Yager, assistant chief engineer, Northern Pacific
Reports of the secretary and treasurer
Reports of committees on:
- Standardization
- Water Service and Sanitation
- Uniform General Contract Forms
- Stresses in Track
- Rules and Organization
- Roadway

SECOND DAY, WEDNESDAY, MARCH 12
Reports of committees on:
- Ballast
- Wood Preservation
- Signals and Interlocking
- Ties
- Track
- Yards and Terminals
- Shops and Locomotive Terminals
- Iron and Steel Structures
- Clearances
- Rail
- Masonry

THIRD DAY, THURSDAY, MARCH 13
Reports of committees on:
- Wooden Bridges and Trestles
- Buildings
- Records and Accounts
- Electricity
- Economics of Railway Labor
- Economics of Railway Operation
- Economics of Railway Location
- Rivers and Harbors
- Co-operative Relations with Universities

The annual dinner will be held as usual on Wednesday evening of the convention week. There will be two principal speakers, one of whom is Charles Donnelly, president of the Northern Pacific. A special program has been arranged for Tuesday evening which will consist essentially of a review of the association's representation at the World Engineering Congress held last fall at Tokyo, Japan. This will include a showing of moving pictures featuring the congress, in addition to a film furnished by the Japanese National Railways which will depict railway practices in Japan.

## H. M. Tate Appointed to I. C. C.

The President's nomination of Hugh McCall Tate, of Knoxville, Tenn., for appointment as a member of the Interstate Commerce Commission to succeed R. V. Taylor, whose term expired at the end of the year, was confirmed by the Senate on February 20 after some debate during which the appointment was opposed by a number of Democratic Senators and Progressive-Republicans who objected because a Republican had been appointed to the place and also on the ground that Mr. Tate's law firm has represented the Southern Railway as local counsel. Confirmation was ordered by a vote of 48 to 18. Senator Black, of Alabama, who led the opposition, said that the appointment had been made at the request of Jeremiah Milbank, a director of the Southern. Chairman Couzens, of the committee on interstate commerce, said he could deny

Hugh McCall Tate

that statement with authority. Senator Black had intimated that the appointment had been made with reference to the Clayton act proceeding pending before the commission involving the legality of the Southern's acquisition of control of the Mobile & Ohio. Mr. Tate was born at Morristown, Tenn., September 15, 1882. He was graduated from the University of Tennessee in 1902 with the B. A. degree and in 1903 with the B. L. degree. He became a member of the law firm of McCanless & Tate at Morristown but in 1909 removed to Knoxville as a member of the firm of Luck, Fowler, Andrews & Tate. From 1910 to 1918 he was with the firm of Green, Webb & Tate at Knoxville, after which he served for two years as chancellor of the eleventh chancery division of Tennessee. He resigned in 1920 to become a member of the firm of Cates, Smith, Tate & Long, with which he has since been connected. From 1905 to 1909 he was city attorney of Morristown.

# Meetings and Conventions

*The following list gives names of secretaries, date of next or regular meetings and places of meetings.*

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, May 13-16, 1930, Stevens Hotel, Chicago. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, April 8-10, 1930, Clarendon Hotel, Daytona Beach, Fla.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 16-19, 1930, Hotel Nicollet, Minneapolis, Minn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, Supt. Dining Car Service, Chicago, Indianapolis & Louisville Ry., 836 Federal St., Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Annual Convention, June 23-26, 1930, San Francisco, Cal.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.
- Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.
- Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Next meeting, June 17-20, 1930, Brown Hotel, Louisville, Ky.
- Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 15-16, 1930, Edgewater Gulf Hotel, Biloxi, Miss.
- Protective Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, June 17-19, 1930, Hotel Statler, Buffalo, N. Y.
- Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, June 24-26, 1930, Cosmopolitan Hotel, Denver, Colo.
- Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 16-19, 1930, Royal York Hotel, Toronto, Ont.
- Division II.—Transportation.—G. W. Covert, 431 South Dearborn St., Chicago. Next meeting, May 7-9, 1930, Hotel Cleveland, Cleveland, Ohio.
- Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
- Division IV.—Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago. Next meeting, March 11-13, 1930, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
- Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 11-13, 1930, Palmer House, Chicago.
- Electrical Section.—E. H. Fritch.
- Signal Section.—H. S. Balliet, 30 Vesey St., New York. Next meeting, March 10-11, 1930, Stevens Hotel, Chicago.
- Division V.—Mechanical.—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual convention, June 18-25, 1930, new Auditorium, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.
- Equipment Painting Section.—V. R. Hawthorne, 431 South Dearborn St., Chicago, Next convention, September 9-11, 1930, Congress Hotel, Chicago. Exhibit by Supply Men's Association.
- Division VI.—Purchases and Stores.—W. J. Farrell. 30 Vesey St., New York, N. Y. Annual convention, June 18-20, 1930, New Auditorium, Atlantic City.
- Division VII.—Freight Claims.—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting, June 10-13, 1930, Olympia Hotel, Seattle, Wash.
- Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York, N. Y. Next meeting, June 18-20, 1930, New Auditorium, Atlantic City, N. J.
- Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, October 21-23, 1930, Brown Hotel, Louisville, Ky. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agri. Agt., C. R. I. & P. Ry., Chicago, Ill. Annual meeting, June 18-20, Hotel Duluth, Duluth, Minn.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 11-13, 1930, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss Martha C. Moore, Frisco Employes' Magazine, St. Louis, Mo. Next meeting, May, 1930, Kansas City, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St., P. & P. R. R., 11402 Calumet Ave., Chicago. Annual convention, September 10-12, 1930, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foreman's Association.—Acting Secretary: H. W. Leighton, Harry W. Leighton Co., 565 W. Washington St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington. D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 27-29, 1931, Philadelphia, Pa.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, May 21-23, 1930, Richmond, Va.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Semi-annual meeting, June 18, 1930, Hotel Dennis, Atlantic City, N. J. Annual convention, October, 1930, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. W. Fogg, MacLean-Fogg Lock Nut Co., 2649 N. Kildare Ave., Chicago. Meets with International Railway General Foremen's Association.

BOILER MAKER'S SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. H. Lawrence, Johns-Manville Corp., 41st St. and Madison Ave., New York. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S CLUB OF LOS ANGELES—J. W. Krause, 514 East Eighth St., Los Angeles, Cal. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Annex Hotel, 6th and Market St., St. Louis, Mo.

CENTRAL RAILWAY CLUB.—W. H. Newman (President), New York Central Railroad, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 3328 Beekman St., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September 23-25, 1930, Hotel Morrison, Chicago. Exhibit of International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—J. H. Jones, Crucible Steel Company of America, 650 Washington Blvd., Chicago. Meets with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY CONGRESS.—Madrid Spain, May 5-15, 1930.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700, La Salle Street Station, Chicago. Next meeting, May 6-9, 1930, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. Annual Convention, September 16-19, 1930, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—L. R. Fyle, Locomotive Firebox Co., 310 So. Michigan Ave., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, May 20-23, 1930, William Penn Hotel, Pittsburgh, Pa. Exhibit by Boiler Makers' Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago. Next convention August 26-28, 1930, Book Cadillac Hotel, Detroit. Exhibit by Supply Men's Association.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual Convention, November 12-15, 1930, Charleston, S. C.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy. M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo. Annual Convention, April 29-May 1, 1930, Hotel Peabody, Memphis, Tenn.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: W. A. Booth, Can. Nat. Rys., Montreal, Que., Can. Annual Congress, September 29-October 4, William Penn and Fort Pitt Hotels, Pittsburgh, Pa.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.— E. Sumner (Fresident), Asst. to Gen. Supt. M. P. Penna. R. R, Philadelphia, Pa. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C. Annual convention, April 30-May 2, 1930, Hotel Roosevelt, New Orleans.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1112 Shoreham Building, Washington, D. C. Next meeting, November, 1930, Commodore Hotel, New York, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next meeting, October 21-23, 1930.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Next meeting, June, 1930, Cleveland, Ohio.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next meeting, September 16-18, 1930, Hotel Stevens, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. Rv., Atlanta, Ga. Next meeting, July 17, 1930, Mobile, Ala.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Inc., 667 The Rookery Building, Chicago. Meets with Master Car Builders' and Supervisors' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryar, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Annual meeting, September 23-26, 1930, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 343 So. Dearborn St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

# *Traffic*

The Interstate Commerce Commission has ordered an investigation of the rates for the intrastate transportation of bituminous coal in Illinois prescribed by the Illinois Commerce Commission. The railroads complain that these rates result in discrimination against interstate traffic.

The Texas & Pacific has applied to the Federal Court at Galveston, Texas, for a restraining order against the Interstate Commerce Commission, involving its decision of January 6, in the New Orleans-Galveston port relationship case. The order, which was to have become effective on March 21, it is contended, gives Texas ports an advantage over New Orleans in rates on grain.

The Interstate Commerce Commission has suspended until September 24 the operation of tariff schedules which propose to establish commodity rates on agricultural implements, asphalt, grain and grain products, iron and steel articles, molasses and syrup, petroleum and petroleum products, and salt from Mobile, Ala., and New Orleans, La., by barge and rail lines to destinations in southern states which in numerous instances would result in the application of lower rates from New Orleans, on traffic moving through Mobile, than from Mobile proper to the same destinations.

## Pennsylvania-Greyhound Establish Rail-Motor Coach Service

The Pennsylvania, in co-operation with the Greyhound Corporation, motor coach line holding company in a subsidiary of which the Pennsylvania has a substantial interest, plans on April 1 to inaugurate a combination rail and motor coach service between New York, Chicago and St. Louis, and between Philadelphia, Chicago and St. Louis. This service will also be available between all intermediate points.

Analogous to the air-rail service which is now operated by the Pennsylvania and other railways, this new travel co-ordination will permit passengers to utilize motor coaches during the daytime and railway sleeping accommodations for night journeys. Present plans contemplate that the service in both directions will involve a daylight motor coach ride at each end of the journey with an intermediate train ride during the night.

The highway service will be operated by the Greyhound Lines, the Greyhound Corporation subsidiary in which the Pennsylvania is interested. The announcement states that fares and schedules will be published shortly and that through tickets for the combination service will be sold by both Pennsylvania and Greyhound agents. Tickets will contain separate coupons covering, respectively, the motor coach portions of the journey, the rail trip and the pullman accommodations.

# *Equipment and Supplies*

## Locomotives

THE ELGIN, JOLIET & EASTERN is inquiring for eight 2-8-2 locomotives.

THE ILLINOIS TERMINAL is inquiring for two locomotives of the 2-8-2 type.

THE ALASKA RAILROAD has ordered one rotary snow plow from the American Locomotive Company.

THE CANADIAN PACIFIC has ordered five single-track snow plows and three double-track snow plows, to be built at its Angus shops, and 10 locomotive tenders to be built by the Montreal Locomotive Works.

THE GEORGIA, ASHBURN, SYLVESTER & CAMILLA has ordered one locomotive of the 2-8-2 type from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of November 9.

## Freight Cars

THE NEWFOUNDLAND RAILWAY is inquiring for 50 box cars of 30 tons capacity.

THE NATIONAL TUBE COMPANY has ordered three special flat cars from the Greenville Steel Car Company.

THE WHITE EAGLE OIL & REFINING COMPANY, Kansas City, Mo., is inquiring for 25 tank cars of 8,000-gal. capacity.

THE AMIESITE ASPHALT COMPANY OF AMERICA, Philadelphia, Pa., is inquiring for five flat cars of 50 tons capacity.

THE PACIFIC FRUIT EXPRESS is expected to enter the market for 1,500 refrigerator cars.

THE EASTERN MICHIGAN RAILWAYS have ordered 10 Hart convertible ballast cars from the American Car & Foundry Company.

THE NORFOLK & WESTERN will construct 500 all-steel box cars of 50 tons' capacity at its Roanoke shop and is asking for bids for rebuilding 1000 all-steel hopper coal cars.

## Passenger Cars

THE CHICAGO, BURLINGTON & QUINCY will build ten baggage cars in its own shops. Inquiry for this equipment was reported in the *Railway Age* of January 11.

THE GULF, MOBILE & NORTHERN has ordered two combination passenger and baggage gas-electric rail motor cars from the J. G. Brill Company. Inquiry for this equipment was reported in the *Railway Age* of February 8.

## Machinery and Tools

THE CANADIAN PACIFIC will buy three steam cranes, three pile drivers and one Jordan ballast spreader.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for miscellaneous heavy shop tools including drills, lathes, electric hoists and grinders.

THE ERIE has ordered two 25-ton 8-wheel steam driven locomotive cranes from the Orton Crane & Shovel Company.

THE ST. LOUIS SOUTHWESTERN has ordered one Monarch Machine Tool Company's 24-in. by 10-ft. extra-heavy duty, 16-spindle, helical geared head, motor driven lathe, from Manning, Maxwell & Moore, Inc.

THE ATCHISON, TOPEKA & SANTA FE has ordered one 30-ton gasoline-driven crane, from the Orton Crane & Shovel Company. This company is now inquiring for two double-floor grinders, and 100-ton grinding box press.

## Iron & Steel

THE ATCHISON, TOPEKA & SANTA FE has ordered 450 tons of structural steel for a bridge over the San Joaquin river in California from the American Bridge Company.

## Signaling

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the General Railway Signal Company an electric interlocking, 12 levers, for Somerset, Mass.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for an electro-pneumatic interlocking, 51 levers, for SA tower, South Elizabeth, N. J.

THE TORONTO, HAMILTON & BUFFALO has ordered from the General Railway Signal Company an electric interlocking, 58 working levers, for Hamilton, Ont. The order includes 29 type SA color-light signals and other material.

THE MISSOURI-KANSAS-TEXAS has ordered from the Union Switch & Signal Company, 125 color-light signals, 1,000 relays and other material for automatic signaling on its line between Oakwood, Kan., and Parsons, and between McBaine, Mo., and Franklin, a total length of road of 84 miles, single track.

## Miscellaneous

THE ATCHISON, TOPEKA & SANTA FE has authorized the expenditure of $70,000 for the improvement of its wire communication facilities on the Coast lines, which will include the installation of automatic printer service between Los Angeles and San Bernardino, Cal. Additional telephone service will be installed between Los Angeles and San Diego, with an extension to National City, and between Los Angeles and San Bernardino via Riverside.

# *Supply Trade*

**W. M. Stevenson,** representative of the **Crucible Steel Company of America,** with headquarters at Cleveland, Ohio, has been appointed district representative, with headquarters at Rockford, Ill.

**The International Derrick & Equipment Company,** Columbus, Ohio, has opened an office in the Grant building, Pittsburgh, Pa. **James H. Dye** is district manager.

**Oliver H. Mellum** has been appointed assistant vice-president of the **American Car & Foundry Company,** with headquarters at Chicago. Through a typographical error his name was misspelled in the *Railway Age* of February 22.

The board of directors of the **Armspear Manufacturing Company,** New York, at a recent meeting elected the following officers: **Arthur G. Johnson,** president, **C. K. Freeman,** assistant to the president and secretary and **J. S. Pixley,** vice-president and treasurer.

**The Chicago Pneumatic Tool Company,** New York, has opened a branch office at 327 Philcade building, Tulsa, Okla. **George J. Lynch** has been appointed district manager in charge of this office and the territory it serves. The company recently opened an office and service station at 1 West Sixteenth street, Oklahoma City, Okla.

**Harry B. Loder,** for the past two years with the New York sales office of the **Wrought Iron Company of America,** has been transferred to the general office at Lebanon, Pa., and will represent the company in eastern Pennsylvania, the territory formerly covered by **George H. Clymer,** who has been appointed district sales manager at Philadelphia.

**The Thompson Tool & Supply Company,** Odd Fellows building, Indianapolis, Ind., now represents the Modern Tool Works division of the **Consolidated Machine Tool Corporation of America,** in the Indianapolis territory and **George H. Diers,** 2514 McMicken avenue, Cincinati, Ohio, has been appointed sales representative in the Cincinnati territory.

**Nelson L. Rehnquist,** who has been elected vice-president of the **St. Louis Car Company,** entered the employ of the Milwaukee Electric Railway & Light Company as a messenger boy in 1907, and in 1911 became associated with the St. Louis Car Company. He held various positions until 1916 when he was made purchasing agent. A year ago, when the company entered the airplane construction field, his jurisdiction was extended over that branch. As vice-president, he will continue to have charge of the aviation and purchasing departments.

**Howard R. Gass,** who has been elected vice-president of the **St. Louis Car Com-**

pany, with jurisdiction over the sales department, was at one time a field engineer for Paret & Beard, consulting engineers at Kansas City, Mo., in which capacity he made basic surveys and estimates for the Wichita, Kan., terminals, and had charge of the subway and viaduct construction of the third division of the Kansas City Terminals Railways. Later he was field engineer for the North Kansas City Development Company. He has also been associated with the Kansas City Southern, the Missouri-Kansas-Texas, the Chicago, Rock Island & Pacific, the St. Louis-San Francisco and the New York Central as a locating and construction engineer. From 1914 to 1921, he was railroad inspection and valuation engineer for the Missouri Public Service Commission where he had charge of the field operations in connection with valuation cases. On May 1, 1921, he was appointed sales manager of the St. Louis Car Company, which position he has held until his recent promotion.

## Worthington Pump & Machinery Corporation Annual Report

Net income of $2,529,356 was reported by the Worthington Pump & Machinery Corporation for the year ending December 31, 1929. This net figure was realized after allowance for federal taxes, a charge of $597,729 for depreciation, and a deduction of $350,000 for slow moving or obsolete inventory items. Dividends of $782,997 on the Class "A" preferred stock, and $1,238,601 on the Class "B" preferred stock, or a total of $2,021,597 were paid during the year. After adjustment for these disbursements, the surplus account stood at $5,659,169 on December 31, 1929, as compared with a surplus figure of $4,939,396 at the close of the previous year. There was added to surplus during the past year $212,014 which had been carried in tax reserve of prior years but which was not required for tax payments.

Current assets at the close of the year totaled $17,622,857 and current liabilities $1,561,906, the excess of current assets over current liabilities being $16,060,951, of which $7,543,101 was in cash, call loans, and securtities. Unfilled orders at December 31, 1929, amounted to $4,140,148, which figure, the report states, is approximately the same as was the unfilled order figure at the close of 1928.

## Baldwin Locomotive Works Annual Report

The annual report of the Baldwin Locomotive Works for the year ending December 31, 1929, shows a consolidated net profit of $2,300,463 as against a 1928 net profit of $332,211 and a comparable 1927 figure of $2,442,200.

Sales in 1929 amounted to $42,796,588 as compared with 1928 sales of $22,531,349; operating expenses were respectively $38,939,183 and $22,960,832. For 1929, therefore, there was an operating profit of $3,857,405 whereas in 1928 the manufacturing loss was $429,482. Interest, dividends, and miscellaneous income remained approximately the same during 1929 as in 1928. The figures respectively are $2,123,093, and $2,044,507.

The surplus account during 1929 rose from $15,167,451 to $23,431,001, the principal additions being $5,328,348 in capital surplus acquired through the equity of the Baldwin in the Midvale Company, $1,628,107 of federal tax refunds and $2,300,463 representing the 1929 net profit. Dividends amounting to $2,837,629 were paid from reserves for this purpose, as has been the case during the past six years.

Selected items from the 1928 and 1929 consolidated statements of profit and loss follow:

| | 1929 | 1928 |
|---|---|---|
| Sales | $42,796,588 | $22,531,349 |
| Cost | 38,939,183 | 22,960,832 |
| Operating Profit | 3,857,405 | 429,482* |
| Other Income | | |
| Interest, dividends, etc. | 2,123,093 | 2,044,507 |
| Gross Income | 5,980,498 | 1,615,025 |
| Deduct | | |
| Interest, etc. | 1,238,078 | 682,814 |
| Profit | 4,742,420 | 932,211 |
| Deduct | | |
| Depreciation | 1,710,000 | 600,000 |
| Taxes | 90,500 | ..... |
| Equity of Minority Stockholders of The Midvale Company | 641,457 | ..... |
| Net Profit | $2,300,463 | $332,211 |

* Loss.

## Chicago Railway Equipment Company

The annual report of the Chicago Railway Equipment Company for 1929 shows undivided profits of $1,129,273 as compared with $751,970 in 1928. Of this amount $209,774 was paid as dividends on the 120,000 shares of preferred stock and $14,984 on the 60,000 shares of common stock.

## Lima Locomotive Works, Inc., Annual Report

Net income of $501,506, after allowance for depreciation and federal taxes, was reported by the Lima Locomotive Works, Inc., for the year ending December 31, 1929, according to the annual report issued February 10. This compares with a net loss of $111,606 for the year ending December 31, 1928, and a 1927 deficit of $191,341.

The surplus at the close of last year amounted to $2,882,558 as compared with a surplus of $2,381,052 at the close of 1928. The balance sheet as of December 31, 1929, lists current assets of $8,277,460 and current liabilities of $548,550. Of the current assets $75,229 is in cash, $2,869,674 in United States government securities, and $170,380 in investments other than these latter.

Joel S. Coffin, chairman, in his remarks to the stockholders states that while the business during 1929 showed a material improvement over that of 1928, the Lima facilities were nevertheless operated far below capacity. "In the closing months of 1929 and thus far in 1930," he adds, "there has been an encouraging increase in the number of locomotives ordered by the railroads, and the company therefore has begun the year with a substantial amount of business on its books. Unfilled orders as of January 1, 1930, together with bookings since that date, amount to $12,181,113." The 1928 annual report carried a comparable figure of $2,485,157 for unfilled orders on the books of the company as of January 1, 1929.

# Obituary

**Bernard J. Hausfeld,** advertising manager of The Lunkenheimer Company, Cincinnati, Ohio, died on February 18.

**Archibald Carr McLachlan,** service engineer of the Superheater Company on the southeastern railroads, died at his home near Charlottesville, Va., on January 21.

**James D. Cowan,** secretary and treasurer of the **National Lock Washer Company,** Newark, N. J., died on February 26 at his home in Summit, N. J., at the age of 42.

**E. C. Fisher,** district sales manager of the **American Locomotive Company,** with headquarters at St. Louis, who died at Rochester, Minn., on February 17, was born in Powhatan County, Va., in April, 1875, and graduated from the Virginia Mechanics Institute. He was

E. C. Fisher

first employed by the Richmond Locomotive Works and became associated with the American Locomotive Company in 1901. During his employ with this company he served as company manager at Pittsburgh, Pa. and Paterson, N. J., and as foreign representative in London and South Africa. In 1922, he was appointed district sales manager at St. Louis, which position he was holding at the time of his death.

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LOCOMOTIVES ARE NOW RUN THROUGH on passenger trains of the Pennsylvania between Pittsburgh, Pa., and Detroit, Mich., 316 miles. This change has been made on three express trains each way daily. Enginemen and firemen change, as heretofore, at Mansfield, Ohio, 175 miles from Pittsburgh.

# Construction

CANADIAN NATIONAL.—The Montreal Stock Yards Company, a subsidiary of the C. N. R., has awarded a contract to Walter G. Hunt Company, Ltd., Montreal, Que., for the construction of a two-story brick, concrete and steel office building, 127 ft. by 42 ft., at the Point St. Charles stock yards, Montreal. The Canadian National has also received bids for the construction of a four-story brick addition to the warehouse at the east yard, Winnipeg, Man.

CANADIAN NATIONAL. — Nine million dollars will be spent on branch line construction by this company in western Canada this year, according to a statement by A. E. Warren, western vice-president. This is exclusive of the Hudson Bay Railway and of expenditure for new works on lines now in operation. The work to be undertaken includes the grading of 261 miles of line, laying of track on 201 miles and ballasting of 280 miles. When this is finished, the company will have opened for operation 290 miles of the 518-mile three-year branch line program approved by the Canadian Government at its last session. Twelve branch lines are covered by the program, of which six are wholly in Saskatchewan; one partly in Saskatchewan and Alberta; three wholly in Alberta, and two in British Columbia. Divided by provinces the work can be summarized as follows: Saskatchewan, 171 miles of grading, 139 miles of track-laying and 218 miles of ballasting; Alberta, 78 miles of grading and 52 miles of track-laying and ballasting; British Columbia, 32 miles of grading and 10 miles of track-laying and ballasting. The longest piece of line is 126 miles, from St. Walburg, Sask. to Bonnyville, Alta. Of this line, 100 miles will be graded during the year and steel laid and ballasting completed on 50 miles. In addition to the completion of this 290 miles, grading will also be finished on 213 miles of additional line and 90 additional miles of steel laid, so that very little work will be required to complete the full program within the stipulated three-year period. Two bridges of considerable size will also be constructed this year. One of these, over the Beaver river in Saskatchewan, will be 1,300 ft. long and 110 ft. high and with a clear span of 180 ft. The second, over the Fraser river, will be 4,100 ft. long and will contain a swing span of 280 ft. Three hundred miles of fencing, 240 miles of telegraph line and a large number of railway buildings are also part of the construction program for 1930.

CANADIAN NATIONAL-CANADIAN PACIFIC.—Plans for the removal of the Parent Square passenger station at Quebec, Que., and for important changes in the layout of the yards at the Palais station have been completed by these two companies and submitted to the city authorities for their consideration and approval. It is intended to build new Canadian National and Canadian Pacific express buildings west of the Palais station, on the site of the present power house, while a new power house is to be erected north of the station. A post office building is also to be constructed adjacent to the proposed express offices and a new ice house, gas plant and oil house will be built alongside the new power house. Yard improvements involve the filling in of a large tract of low land along the shore of the St. Charles river, adjoining the main portion of the present yard. This reclaimed land will be used for the construction of six or more tracks for the accommodation of Canadian National trains, while a new switching track will be built from the Palais station to the old Canadian Northern station. The Canadian National freight sheds and offices will remain, as at present, at Parent Square. A contract in connection with the proposed improvements has already been awarded to the Newton Construction Company for the erection of a three-story brick and concrete mail sorting building, approximately 100 ft. by 40 ft., west of the Palais station. Work on other parts of the improvement program will be begun as soon as possible.

CHESAPEAKE & OHIO.—This company has authorized a number of projects at various points on its lines, as follows: The extension of double track at Iron Gate, Va., and the installation of remote control for the east end of double track from JD Cabin, Iron Gate, at a probable cost of $43,000; the construction of a 358,000-gal. steel water tank and water treating plant at Hinton, W. Va., at an estimated cost of $40,000; the construction of the west leg of a wye track at White Oak Junction, W. Va., at an approximate cost of $81,000, and the replacement of the present two-position automatic semaphore signals between Augusta, Ky., and Stevens with three-position automatic color light signals, at a probable cost of $76,000. Bids for the construction of the water tank at Hinton were received on February 19.

CHICAGO & NORTH WESTERN.—The work of clearing a site grading and installation of a drainage system in the area between Western avenue and Lincoln, Fourteenth and Sixteenth streets, Chicago, has been undertaken by this company preparatory to the construction of a potato handling freight yard which will require an ultimate expenditure of $2,000,000. It is planned to place the first unit of the yard which can be made available to any railroad in the Chicago area in operation on April 1. When the complete development has been finished, team track facilities will be provided for 650 cars. A contract has been awarded to the Koss Construction Company, Des Moines, Iowa, for the construction of a grade separation structure to carry a double track line over States Highway 58 northeast of Des Plaines, Ill. The entire cost of the structure, part of which will be borne by the State of Illinois, will be $88,000.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to Peterson, Shirley & Gunther, Omaha, Neb., for the grading of a single-track line between Dalhart, Tex., and Morse, about 65 miles. This company will close bids on March 10 for the construction of the first section, 12 miles, of its joint line with the Chicago, Milwaukee, St. Paul & Pacific into Kansas City, Mo., between Polo, Mo., and Birmingham.

CINCINNATI UNION TERMINAL.—This company will close bids on March 3 for furnishing and erecting the structural steel for the new Cincinnati, New Orleans & Texas Pacific freight line into the new union terminal at Cincinnati, Ohio.

DELAWARE, LACKAWANNA & WESTERN.—A contract for the furnishing of equipment for a sand drying plant, and the construction of a 50-ton four-track dry sand storage plant for locomotives at Gravel Place, Pa., has been awarded to the Roberts & Schaefer Company, Chicago.

ELGIN, JOLIET & EASTERN.—A contract for furnishing and installing an electrically operated crusher and spiral lowering chutes in the coaling station at Joliet, Ill., has been awarded to the Roberts & Schaefer Company, Chicago.

KANSAS CITY SOUTHERN. — Application has been filed with the Public Service Commission of Kansas for permission to construct a new double-track freight line, about a mile long, along the Missouri river at Kansas City, Mo., at a cost of approximately $1,500,000. The construction involves the driving of a tunnel 350 ft. long between Delaware and Wyandotte streets on the double-track line which will extend between a point near First street and Grand avenue and the Kansas City Southern's Henning street freight yard in the Central Industrial district. Grade separation structures will be constructed at Main street and at Broadway.

LOUISVILLE & NASHVILLE.—A contract has been let to E. R. McCracken, Chicago, for the extension of an underpass under the tracks of this company at Third and K Streets, Louisville, Ky., at a cost of about $100,000.

NEW YORK, CHICAGO & ST. LOUIS.—A contract has been let to the Roberts & Schaefer Company, Chicago, for the construction of an 80-cu. ft. capacity bucket, electric cinder plant at Madison, Ill.

PROVINCE OF QUEBEC.—The government of the Province of Quebec, after eliminating 16 grade crossings during 1929, plans the elimination of 25 additional railroad grade crossings in that province during the current year. Eleven of these crossings are located on the Canadian National, at Trois Pistoles, Rimouski, St. Jean, Notre Dame du Mont Carmel, Tache, Melbourne, Figuery (two), Amqui, Val Brillant and Matapedia; nine are on the Canadian Pacific, at Pointe du Lac (two) Point aux Trembles, Yamachiche, Charlemagne, Caughnawaga, Montebello (two) and Cookshire; three on the Quebec Central at Thetford Mines, St. Francois and Notre Dame des Pins and two on the Napierville Junction Railway at Napierville and La Basse.

RICHMOND, FREDERICKSBURG & POTOMAC.—A contract has been let to the Roberts & Schaefer Company, Chicago, for the furnishing and installing of an electrically operated coal crusher in the coaling station at Richmond, Va.

SPRUCEMONT NEVADA.—The Interstate Commerce Commission has authorized this company to construct a line from Ventosa, Nev., southerly to Sprucemont, 23.5 miles, to serve a mining district; estimated cost, exclusive of equipment, $375,390. Permission has also been granted for the company to retain excess earnings.

TEMISKAMING & NORTHERN ONTARIO.—A contract for the construction of an extension of the present line from its terminus at Mile 97, north of Cochrane, Ont., to Moose River crossing at Blacksmith Rapids, about 30 miles, has been let to H. F. McLean, Ltd., Toronto, Ont.

TEXAS CITY TERMINAL.—This company contemplates the construction of an addition to its grain elevator at Texas City, Tex. It is expected that the addition will have a capacity of either 1,000,000 or 2,000,000 bu., requiring an expenditure of between $1,000,000 and $3,000,000. The present elevator capacity is 500,000 bu.

WESTERN PACIFIC CALIFORNIA.—The Interstate Commerce Commission has denied the application filed by this company, a subsidiary of the Western Pacific, for authority to build a line in the San Joaquin Valley, Cal., from a connection with the W. P. at Nilegarden to a point on Kings river about 21 miles east of Fresno. The proposed line would be about 138 miles but would include operation under trackage rights over the Tidewater Southern for 12 miles. The application was denied on the ground that it would involve inherently wasteful paralleling of existing railways. Commissioner Eastman dissented in part, suggesting a provision under which the Southern Pacific would extend to the Western Pacific trackage rights over its line through the valley. In summarizing its conclusions the commission said:

> The San Joaquin Valley is traversed by three or more parallel lines of railroad, owned by two actively competing systems, the S. P. and the Santa Fe. The proposed line, paralleling them, would nowhere be more than 6 miles from the main line of the S. P. It would reach no towns that are not served by existing railways, and would not provide better or cheaper routes to any market. The case for it rests substantially on two claims: First, that it would shorten the hauls to a railroad in parts of the region traversed, thereby promoting more intensive agricultural development; and second, that it is necessary as a feeder of the W. P. and its allied lines, particularly the Rio Grande, which need more business to assure their proper support. In view of the testimony to the contrary on behalf of farmers in California, it can not be presumed that to promote more intensive culture now would be in the public interest. All the territory south of the San Joaquin River and much to the north is fully developed, mainly in crops that are overproduced. The applicant expects that even in the fifth year of operation 79.3 per cent of the revenue from traffic originating on its line would be derived directly from fruits, fresh and dried, which are the crops already overproduced. This and other evidence indicates that, at least as late as the fifth year, little of the traffic is expected from those areas that are comparatively distant from railways. The saving in truck haul is the only certain benefit shown to the community. The evidence indicates that this saving would be very small in proportion to the cost of providing the additional railroad service, and that the lands near the proposed route can be used advantageously in large part for dairying, raising cotton, and other crops that produce only a light rail tonnage. The testimony concerning the needs of the W. P. does not justify such inherently wasteful paralleling of existing railways.

# *Railway Finance*

AKRON, CANTON & YOUNGSTOWN.—*1929 Earnings.*—The annual report of this company and the Northern Ohio Railway for 1929 shows net income after interest and other charges of $735,087, as compared with $453,260 in 1928. Selected items from the income statement follow:

| | 1929 | 1928 | Increase or Decrease |
|---|---|---|---|
| Average Mileage operated | 171.31 | 171.36 | — .05 |
| RAILWAY OPERATING REVENUES. | 3,809,447 | 3,538,026 | +271,421 |
| Maintenance of way | 560,550 | 665,729 | —105,179 |
| Maintenance of equipment | 316,877 | 348,785 | — 31,908 |
| Transportation | 930,459 | 925,838 | + 4,622 |
| TOTAL OPERATING EXPENSES | 2,192,258 | 2,266,037 | — 73,778 |
| Operating ratio | 57.42 | 63.98 | — 6.56 |
| NET REVENUE FROM OPERATIONS | 1,621,914 | 1,274,477 | +347,436 |
| Railway tax accruals | 251,583 | 172,532 | + 79,051 |
| Hire of freight cars | 386,400 | 386,400 | ..... |
| Joint facility rents | 30 | 30 | ..... |
| NET RAILWAY OPERATING INCOME | 992,093 | 722,461 | +269,632 |
| GROSS INCOME | 1,091,556 | 801,282 | +290,274 |
| Interest on funded debt. | 338,963 | 332,622 | + 6,340 |
| TOTAL DEDUCTIONS FROM GROSS INCOME. | 356,469 | 348,021 | + 8,447 |
| NET INCOME | 735,087 | 453,260 | +281,827 |

BALTIMORE & OHIO.—*Annual Report.*—See preliminary statement of financial results in 1929 published as an advertisement on adjacent pages.

BALTIMORE & OHIO.—*Unification Plan Withdrawn.*—This company has withdrawn its application, filed with the Interstand Commerce Commission about a year ago, which asked the commission to approve the allocation to its system of about one-fourth of the railroad mileage in eastern territory, in accordance with the "four-system" plan. Replying to the letter from C. D. Mahaffie, director of the commission's Bureau of Finance, dated January 25, R. Marsden Smith, general attorney of the Baltimore & Ohio, said that in view of the adoption of the commission's complete plan and the suggestion made by Mr. Mahaffie "as to the desirability that applications include precise statements as to the considerations and other terms and conditions, which would require amended application for re-service upon the public authorities in the several states concerned," the Baltimore & Ohio has concluded not to proceed further under the application. Mr. Mahaffie replied stating that it would be considered withdrawn.

BOSTON & MAINE.—*First Dividend on Common Since 1913.*—This company has declared a quarterly dividend of $1 on its common stock, placing it thereby upon 4 per cent per annum basis. This is the first common dividend declared by the company since 1913. It will be payable April 1 to holders of record of March 8. A bill in equity to test out any question whether preferred stock holders of the Boston and Maine Railroad have any rights to cumulative or back dividends over common stock holders, has been filed in the Supreme Court of Massachusetts, following the declaration of the common dividend. The bill was filed by Joslin and Starr, as counsel for Arthur W. Joslin of Wellesly Hills, Mass. He seeks a preliminary restraining order against payment of the common stock dividend, and alleges that the preferred stock holders are entitled to dividends for the years 1925, 1926, 1927 and 1928 before any dividend is paid on the common stock.

The Boston & Maine in a statement issued following the filing of Joslin's suit said, "It is expected that an arrangement will be made so that there will be no interference with the payment of the dividend on the common stock as declared."

CENTRAL OF NEW JERSEY.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability with respect to $480,000 of its equipment trust 4½ per cent certificates of 1926. The issue will mature in installments from 1930-41. The issue is authorized to be sold to the highest bidders—the Mellon National Bank of Pittsburgh and Kountze Brothers of New York—at 99.192, which will make the cost to the railroad approximately 4.65 per cent.

CHESAPEAKE BEACH.—*Lease Warrants.*—The Interstate Commerce Commission has authorized this company to issue $37,500 of lease warrants or notes in connection with the purchase of gas-electric rail car equipment. The notes will mature in installments over a period of three years and two months and will bear no interest. They will be issued to the J. G. Brill Company.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $2,115,000 of its equipment trust, series K, of 1929 certificates. The issue will bear interest at 4½ per cent and will mature in installments from 1930-1944. The issue is authorized for sale to the highest bidder, Halsey, Stuart & Co., Inc., at 97.66, which will make the annual cost to the company approximately 4.874 per cent.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—This company will, subject to the approval of the Interstate Commerce Commission, offer $32,228,000 of 30-year, 4½ per cent cenvertible bonds to its preferred and common stockholders at 95. Speyer & Co., the National City Company and the J. & W. Seligman Co. would underwrite the issue. The con-

version privilege would become operative from May 1, 1931, the rate of exchange to be eight shares of common stock (100 par) for each $1,000 bond.

DENVER & RIO GRANDE WESTERN.—*Acquisition of D. & S. L.*—The Interstate Commerce Commission has assigned this company's application for authority to acquire control of the Denver & Salt Lake for hearing at Denver on March 27 before Examiner Davis.

KENTUCKY & INDIANA TERMINAL.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue $298,400 of promissory notes to bear interest at 6 per cent and to mature serially over a period of five years, the notes to be delivered to the Lima Locomotive Works in connection with the purchase of eight locomotives.

LEHIGH VALLEY.—*1929 Earnings.*—The annual report of this company for 1929 shows net income after interest and

(*Continued on page 581*)

# Annual Reports

## The Baltimore and Ohio Railroad Company

OFFICE OF THE PRESIDENT
BALTIMORE, MD., February 28, 1930.

*To the Stockholders of*
*The Baltimore and Ohio Railroad Company:*

The President and Directors submit herewith a preliminary condensed income statement, compared with the preceding year, together with balance sheet, as of December 31, 1929, and certain other general information which it is thought will be of interest.

The Annual Report in the customary form will be prepared and forwarded later to those stockholders who may advise the Secretary of the Company of their desire to receive a copy.

The net income for the year available for dividends and other corporate purposes, after the payment of interest, rentals, taxes and other fixed charges, was ..... $28,767,908. This is a decrease of $333,023, compared with 1928, in which year your Company earned the largest net income in its history.

After paying the 4% dividend on the Preferred Stock, there remained ..... $ 26,413,380, equal to $11.24 per share on the *average amount* of common stock outstanding during the year. Quarterly dividends at the annual rate of 6% were declared on the common stock for the first six months of the year, and at the annual rate of 7% for the last half of the year. The total dividends declared on the common stock amounted to ..... $ 15,367,783, leaving a Surplus from the operations for the year of ..... $ 11,045,597.

The total accumulated surplus of your Company on December 31, 1929, was ..... $114,468,786.22

Your Company increased its capital by the issue and sale of $41,107,700 additional common stock at $100.00 per share to its stockholders as of June 20, 1929. This sale not only provided funds necessary for additions and betterments to the property, but increased the ratio of capital stock to total capitalization, thereby placing the Company in a better credit position. The ratio of stock to total capitalization is 36.41%, and the ratio of funded debt is 63.59%.

During the year there was an increase in investment in road of ..... $15,293,860
and in real estate of ..... 2,367,735
New equipment was acquired at a cost of $14,560,820
and old equipment retired in the amount of 7,408,929
Resulting in a net increase in Investment in Equipment of ..... 7,151,891

Total increased investment in property used in transportation service ..... $24,813,486

The additional equipment consisted of one heavy freight locomotive, one gas-electric car trailer and 100 steel-underframe

### THE BALTIMORE AND OHIO RAILROAD COMPANY

**Income Account**

| | 1929 | 1928 | Increase or Decrease Amount | % |
|---|---|---|---|---|
| Revenue from freight transportation | $205,489,402 | $197,215,444 | $ 8,273,958 | 4.20 |
| Revenue from passenger transportation | 22,138,627 | 23,712,130 | *1,573,503 | *6.64 |
| Revenue from mail, express and other transportation service | 17,790,747 | 15,891,107 | 1,899,640 | 11.95 |
| Total Railway Operating Revenues | $245,418,776 | $236,818,681 | $ 8,600,095 | 3.63 |
| Maintenance of Way and Structures | $ 29,418,140 | $ 26,895,746 | $ 2,522,394 | 9.38 |
| Maintenance of Equipment | 51,765,468 | 47,404,095 | 4,361,373 | 9.20 |
| Traffic | 5,948,432 | 5,748,601 | 199,831 | 3.48 |
| Transportation | 82,958,813 | 82,429,731 | 529,082 | .64 |
| General | 8,250,057 | 7,958,369 | 291,688 | 3.67 |
| Miscellaneous | 2,229,124 | 2,114,326 | 114,798 | 5.43 |
| Total Railway Operating Expenses | $180,570,034 | $172,550,868 | $ 8,019,166 | 4.65 |
| Transportation Ratio | 33.80% | 34.81% | | |
| Total Operating Ratio | 73.58% | 72.86% | | |
| Net Revenue from Railway Operations | $ 64,848,742 | $ 64,267,813 | $ 580,929 | .90 |
| Taxes | $ 11,965,798 | $ 11,638,718 | $ 327,080 | 2.81 |
| Equipment, Joint Facility Rents, etc. | 3,698,834 | 3,241,378 | 457,456 | 14.11 |
| Total Charges to Net Revenue | $ 15,664,632 | $ 14,880,096 | $ 784,536 | 5.27 |
| Net Railway Operating Income, as defined in Transportation Act of 1920 | $ 49,184,110 | $ 49,387,717 | $ *203,607 | *.41 |
| Other Income—Rents, Dividends on Stock and Interest on Bonds Owned | 8,427,835 | 7,378,325 | 1,049,510 | 14.22 |
| Total Income from all sources | $ 57,611,945 | $ 56,766,042 | $ 845,903 | 1.49 |
| Deductions for Interest and Rentals | $ 28,024,557 | $ 26,997,767 | $ 1,026,790 | 3.80 |
| All Other Charges against Income | 819,480 | 667,344 | 152,136 | 22.80 |
| Total Deductions from Income | $ 28,844,037 | $ 27,665,111 | $ 1,178,926 | 4.26 |
| Balance of Income available for dividends and other Corporate purposes | $ 28,767,908 | $ 29,100,931 | $ *333,023 | *1.14 |
| Dividends declared: | | | | |
| Preferred Stock—4% | $ 2,354,528 | $ 2,354,528 | ..... | ..... |
| Common Stock—6% to June 30, 1929, and 7% from July 1, 1929 | 15,367,783 | 12,911,275 | 2,456,508 | 19.03 |
| Total Dividends | $ 17,722,311 | $ 15,265,803 | $ 2,456,508 | 16.09 |
| Leaving a Surplus, after all charges and dividends declared, of | $ 11,045,597 | $ 13,835,128 | $ *2,789,531 | *20.16 |

[ADVERTISEMENT]

### Statistics

| | | | | |
|---|---|---|---|---|
| Revenue Passengers Carried | 9,038,071 | 10,257,996 | *1,219,925 | *11.89 |
| Revenue Passenger Miles | 728,586,197 | 768,550,062 | *39,963,865 | *5.20 |
| Average Miles per Passenger | 80.61 | 74.92 | 5.69 | 7.59 |
| Average Rate per Passenger Mile (cents) | 3.039 | 3.085 | *.046 | *1.49 |
| Tons of Revenue Freight Handled | 108,602,048 | 103,714,942 | 4,887,106 | 4.71 |
| Revenue Ton Miles | 20,657,869,061 | 20,243,199,084 | 414,669,977 | 2.05 |
| Average Miles per Ton | 190.22 | 195.18 | *4.96 | *2.54 |
| Average Rate per Ton Mile (mills) | 9.95 | 9.74 | .21 | 2.16 |
| Revenue Tons per Train Mile | 871.92 | 868.28 | 3.64 | .42 |
| Freight Train Miles per Train Hour | 11.47 | 11.43 | .04 | .35 |

* Decrease

## THE BALTIMORE AND OHIO RAILROAD COMPANY

### Condensed Balance Sheet—December 31, 1929

### ASSETS

| | | |
|---|---|---|
| Investment in Property used in Transportation Service | | $ 894,281,621 |
| Road | $634,709,871 | |
| Equipment | 259,571,750 | |
| Investment in Separately Operated Companies, including Miscellaneous Physical Property | | 94,153,366 |
| Investment in Sinking Funds and Deposits account Property Sold | | 736,112 |
| Investment in Other Companies | | 49,553,307 |
| Total Investments | | $1,038,724,406 |
| Current Assets | | 73,434,024 |
| Cash | $ 19,389,021 | |
| Other | 54,045,003 | |
| Deferred Assets | | 5,210,210 |
| Total | | $1,117,368,640 |

### LIABILITIES

| | | |
|---|---|---|
| Capital Stock Outstanding | | $ 315,158,615 |
| Preferred | $ 58,863,181 | |
| Common | 256,295,434 | |
| Premium on Capital Stock | | 3,355,721 |
| Long Term Debt | | 556,804,622 |
| Mortgage Debt | $478,745,472 | |
| Equipment Obligations | 71,623,200 | |
| Capitalized Leaseholds | 6,435,950 | |
| Current Liabilities—Traffic and Car Service Balances, Accounts and Wages Payable, Interest and Dividends Matured and Unpaid, Unmatured Dividends Declared, and Other Current Liabilities | | 31,608,063 |
| Liability for Provident Funds and Other Deferred Items | | 9,772,838 |
| Accrued Depreciation—Equipment | | 70,160,425 |
| Reserve for Taxes, Insurance, Operation, etc. | | 16,039,570 |
| Surplus | | 114,468,786 |
| Total | | $1,117,368,640 |

### Road Operated and Equipment

| | |
|---|---|
| Total Miles of Road Operated | 5,658 |
| Total Miles of All Tracks Operated | 11,104 |
| Locomotives—Steam 2,349; Electric, 13; Other, 2 | 2,364 |
| Passenger Train Cars | 1,732 |
| Freight Train Cars | 102,072 |
| Tugs, Barges and Other Boats | 178 |
| Work Equipment | 3,104 |

caboose cars built at the Company's shops; and there were purchased fifteen all-steel baggage cars, ten all-steel baggage and mail cars, 100 all-steel express cars, 2,675 all-steel box cars, 1,700 all-steel hopper cars, 700 all-steel gondola cars and certain miscellaneous pieces of equipment.

Eighty-seven locomotives, eleven passenger train cars, 6,314 freight-train cars, 864 pieces of work equipment and fourteen pieces of miscellaneous equipment, no longer suitable for modern and efficient service, were retired during the year.

Effective April 28th the Washington-Baltimore-Philadelphia-New York passenger service was increased by two additional trains in each direction, one of them a special feature train, known as the "Columbian," carrying Colonial Dining Car, Observation-Parlor Car and Club-Lounge Car, in addition to the regular Pullman equipment, as well as individual seat coaches that offer additional comfort without extra charge.

There was a decline in volume of traffic handled during the last three months of the year. Notwithstanding this, the revenues during the full year increased as follows:

| | |
|---|---|
| Freight revenue | $ 8,273,958 |
| Mail revenue | 1,618,953 |
| Express revenue | 226,530 |
| Miscellaneous revenue | 54,158 |
| Total | $10,173,599 |
| The decline in passenger traffic continued throughout the year, the loss in such revenue having been | 1,573,504 |
| Net Increase—All Earnings | $ 8,600,095 |

The increase in mail revenue is due to increased compensation paid by the Government, the revenue for the year 1929 including not only the increased current rates, but an adjustment paid by the Government in July of $1,331,824 covering the period from May 9, 1925, to July 31, 1928.

The increase in freight revenue was 4.2%, as compared with an increase of 2.05% in revenue-ton miles, while passenger revenue decreased 6.64%, as compared with a decrease of 5.2% in revenue passenger miles.

The property has been well maintained, there having been a very liberal maintenance program carried out during the year, as indicated by an increase in maintenance expenses of $6,883,767, or 9.26%, when compared with 1928.

Transportation expenses increased $529,082, or only 0.64%, notwithstanding an increase in operating revenues of over 3.00%. Tons of revenue freight handled increased 4.71%, with an increase in revenue-ton miles of 2.05%. As a result of better performance, transportation expenses required but 33.80 cents of each dollar earned in 1929, as compared with 34.81 cents in 1928.

The ratio of operating expenses to operating revenues in 1929 was 73.58%, as compared with 72.86% in 1928. The increase is due to the liberal maintenance program above referred to.

The Management again commends the Baltimore and Ohio service to the shareholders, and through them, to the general public. Your cooperation is solicited in order that a greater proportion of the traffic moving to and from the territory served by your Company may be secured. The interest and assistance manifested by the shareholders in the past have been most helpful, and it is hoped that their sympathetic cooperation will be continued.

DANIEL WILLARD, President.

[ADVERTISEMENT]

# Financial News

(*Continued from page 579*)

other charges of $7,362,574, as compared with $6,646,507 in 1928. Selected items from the income statement follow:

| | 1929 | 1928 | Increase or Decrease |
|---|---|---|---|
| Average Mileage operated | 1,361.76 | 1,363.68 | — 1.92 |
| Railway Operating Revenues | 71,722,735 | 71,935,071 | —212,336 |
| Maintenance of way | 6,110,456 | 6,428,685 | —318,229 |
| Maintenance of equipment | 15,014,838 | 14,635,725 | +379,113 |
| Transportation | 28,501,635 | 29,019,793 | —518,158 |
| Total Operating Expenses | 53,501,134 | 53,826,935 | —325,801 |
| Net Revenue from Operations | 18,221,601 | 18,108,136 | +113,465 |
| Railway tax accruals | 3,688,876 | 3,677,543 | + 11,332 |
| Equipment rents—Net | 1,605,553 | 2,030,548 | —424,995 |
| Joint facility rents—Net | 20,947 | 65,958 | — 86,905 |
| Net Railway Operating Income | 12,938,556 | 12,315,126 | +623,430 |
| Non-operating income | 1,877,182 | 1,820,624 | + 56,558 |
| Gross Income | 14,815,738 | 14,135,750 | +679,988 |
| Rent for leased roads | 2,342,782 | 2,345,834 | — 3,051 |
| Interest on funded debt | 4,034,855 | 4,020,759 | + 14,096 |
| Total Deductions from Gross Income | 7,453,164 | 7,489,243 | — 36,079 |
| Net Income | 7,362,574 | 6,646,507 | +716,067 |

Louisville & Nashville.—*Abandonment of Operation.*—The Interstate Commerce Commission has authorized this company to abandon operation in freight service over the line of the Louisville & Interurban between a point near Louisville, Ky., and Prospect, 7.7 miles.

Louisville & Nashville.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $15,000,000 of first and refunding mortgage Series C 4½ per cent bonds maturing in 2003 and $5,000,000 of unified 4 per cent bonds maturing in 1940, both issues being authorized for sale to J. P. Morgan & Company at 92.5, making the cost to the company 4.875 per cent for the Series C bonds and 4.96 per cent for the unified bonds.

Minneapolis & St. Louis.—*Government Not Entitled to Priority.*—The Supreme Court of the United States, in a decision rendered on February 24 in United States v. Guaranty Trust Company of New York, et al., held that section 3466 of the revised statutes providing for priority of payment out of insolvent estates of debts due the United States, does not apply to indebtedness of railroads arising under provisions of the transportation act, 1920, relating to the termination of federal control of railroads. In the foreclosure proceedings the federal government presented claims on four accounts arising out of the settlements with the railroad growing out of federal control, asserting that it was entitled to preference and priority over the claims of all other creditors. The court, in the decision by Justice Brandeis, said that the transportation act contained evidence of a purpose of relying upon other means than priority for the payment of advances, and that another policy would have defeated the purpose of Congress in passing the act because it would have prevented the re-establishment of railroad credit and would even have seriously impaired the market value of outstanding railroad securities. It was also pointed out that the rate of interest charged, 6 per cent, was higher than on ordinary business loans.

Missouri Pacific.—*Trackage Rights.*—This company and the Louisiana & Arkansas have arranged a trackage agreement, subject to the approval of the Interstate Commerce Commission, whereby the Missouri Pacific acquires the right to use the L. & A. tracks to and from New Orleans, La., and is given an option to purchase a half interest in that part of the line between Baton Rouge and New Orleans in case it should be sold to another system.

Montour.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its Lewis Run branch, 2 miles long, near Mifflin Jct., Pa.

Pere Marquette.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $14,000,000 of first mortgage 4½ per cent bonds.

Pere Marquette.—*Extra Dividend.*—The directors of this company have declared an extra dividend of $2 on the company's common stock in addition to the regular quarterly disbursement of $1.50 per share of common and $1.25 per share of preferred, both issues. The dividends on the common are payable April 1 to holders of record of March 8.

## Average Prices of Stocks and of Bonds

| | Feb. 25 | Last week | Last year |
|---|---|---|---|
| Average price of 20 representative railway stocks | 133.66 | 136.32 | 133.06 |
| Average price of 20 representative railway bonds | 92.44 | 92.44 | 91.49 |

## Dividends Declared

Bangor & Aroostook.—Common, $.88, quarterly; Preferred, $1.75, quarterly, both payable April 1 to holders of record March 1.

Boston & Maine.—First Preferred A, $1.25, quarterly; First Preferred B, $2.00, quarterly; First Preferred C, $1.75, quarterly; First Preferred D, $2.50, quarterly; First Preferred E, $1.12½, quarterly; Prior Preference, $1.75; Old Preferred, $1.50, quarterly; Common, $1.00, quarterly; all payable April 1 to holders of record March 8.

Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable April 1 to holders of record March 10.

Cuba Railroad.—Common, $1.20, payable March 28 to holders of record March 28.

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The Chicago & Eastern Illinois has shortened its fast freight schedule between Chicago and St. Louis, Mo., to enable merchandise shipments loaded in either city during the day to be delivered at the opposite terminal early the following morning.

# *Railway Officers*

## Executive

**William S. Trowbridge,** comptroller of the Boston & Maine, with headquarters at Boston, Mass., has been appointed vice-president, with the same headquarters, succeeding **William J. Hobbs,** who has retired.

Following the leasing of the Duluth & Iron Range to the Duluth, Missabe & Northern on January 10, it has been announced that the present organization of the D., M. & N. will operate the combined system of 568 miles of railroad.

## Financial, Legal and Accounting

**E. L. Ray,** special accountant of the New York, Chicago & St. Louis at Cleveland, Ohio, has been appointed acting auditor of the Detroit & Toledo Shore Line, with headquarters at Toledo, Ohio.

## Operating

**Willard P. Hutchinson** has been appointed chief train despatcher of the Moncton division of the Atlantic region of the Canadian National.

**John Shea,** roadmaster on the Duluth & Iron Range at Two Harbors, Minn., has been appointed assistant superintendent of the Duluth, Missabe & Northern, which now includes the Duluth & Iron Range, with headquarters at the same point.

**Philemon S. Lewis,** superintendent of the Atlantic City (a subsidiary of the Reading), has been appointed superintendent of the New York division of the Reading, with headquarters at Philadelphia, Pa. Mr. Lewis was born on May 10, 1889, at Springfield, Ill. He attended Princeton University from which he was graduated in 1911. In July of that year he commenced his railway career with the Philadelphia & Reading (now the Reading) and has been in the continuous service of this company to the present time, except during the period of the World War. During 1911 he held the positions of rodman at Williamsport, Pa., and construction inspector at St. Clair, Pa. From August 12, 1912, to September 15, 1914, he served as assistant supervisor at Harrisburg and Pottstown, Pa., and on the latter date he was appointed signal inspector at Philadelphia, Pa. From 1915 to 1917 he served as supervisor at Camden, N. J., and Olney, Pa., and as trainmaster at Reading, Pa. On September 12, 1917 he entered the service of the U. S. Army and was commissioned first lieutenant of engineers. In December of that year he sailed for France with a light railroad regiment.

A year later he was commissioned captain of engineers, and in 1919, major. He held the positions of executive officer to chief engineer, First Army; executive officer, deputy director general of transportation; and chief of troops

Philemon S. Lewis

movement bureau, Paris. After he was discharged from the army he again returned to the Reading as trainmaster at Philadelphia, Pa. In April, 1920, he was appointed assistant superintendent of the Atlantic City, and on August 1, 1921, he was promoted to superintendent, in which capacity he served until his recent appointment.

## Traffic

**H. L. Pigott,** district passenger agent for the Wabash at Los Angeles, Cal., has been promoted to assistant general passenger agent, with headquarters at St. Louis, Mo.

**R. J. Foreman,** general foreign freight agent of the Canadian National, has been appointed traffic manager of the foreign freight department, with headquarters as before at Montreal, Que.

**William Crosswell Ragin,** general freight agent of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has been appointed assistant freight traffic manager, with the same headquarters. Mr. Ragin was born on August 16, 1880, at Summerton, S. C. After being educated in public schools, Emory College, Oxford, Ga., and business college at Macon, Ga., he began his railway career with the Atlantic Coast Line in August, 1898, as a stenographer in the general office at Wilmington, N. C. He served as soliciting agent at Macon, Ga., from February, 1902, until November, 1905, when he was appointed terminal freight and passenger agent at Goldsboro, N. C. In September, 1908, he was appointed special agent at Savannah, Ga., and a year later commercial agent at Ocala, Fla. On September 1, 1912, he was transferred to a similar position at Albany, Ga. From March 16, 1914, to December 1, 1916, he served as division freight agent at Montgomery, Ala., and on the latter date he was promoted to assistant general freight agent at Savannah, Ga. On January 1, 1922, Mr. Ragin was transferred to a similar position at Wilmington, N. C., and in March, 1926, he was promoted to general freight agent, in which capacity he served until his recent appointment.

## Engineering, Maintenance of Way and Signaling

**George C. Hughel,** assistant engineer, construction department of the Chicago & Western Indiana, has been promoted to office engineer, with headquarters as before at Chicago.

**Frank E. Beutler,** acting signal engineer of the Chicago & Western Indiana, has been promoted to signal engineer, with headquarters as before at Chicago.

**E. H. Looker,** assistant engineer on the Cleveland, Cincinnati, Chicago & St. Louis at Bellefontaine, Ohio, has been appointed assistant engineer, maintenance of way of the Peoria & Eastern, with headquarters at Indianapolis, Ind.

**C. B. Brown,** chief engineer of the operating department of the Canadian National, with headquarters at Montreal, Que., will now devote all of his time to the development of the new terminal facilities at Montreal. **H. T. Hazen,** assistant chief engineer, will act for him in all other matters.

## Obituary

**John W. O'Brien,** superintendent of the Peoria division of the New York, Chicago & St. Louis, who died on January 27 at Lafayette, Ind., had been engaged in railway work for 46 years. He was born at Marley, Ill., on January 17, 1872, and entered railway service at the age of 13 years as a telegraph operator on the Lake Erie & Western, now part of the Nickel Plate. In 1891, he was transferred to Lafayette, later being advanced to train dispatcher, and in 1906 to trainmaster at Lima, Ohio. Mr. O'Brien was promoted to division superintendent at Muncie, Ind., in 1909, and in 1918 he was transferred to Peru, Ind. He had been superintendent of the Peoria division since 1921, remaining at that point after the Lake Erie & Western was merged with the Nickel Plate.

**Edwin W. Kluever,** former freight traffic manager of the New York, Chicago & St. Louis, who retired from active service on March 1, 1929, died at Cleveland, Ohio, on January 7, at the age of 49 years. Mr. Kluever had been in the service of the Nickel Plate for 34 years, starting as a messenger in the office of the commercial agent at Cleveland in 1895. He was then advanced to stenographer in the assistant general freight agent's office at Chicago in 1900, secretary to the general freight agent at Cleveland in 1902, chief clerk in the general freight office at Cleveland in 1907, assistant general freight agent in 1917, and general freight agent in 1920. Mr. Kluever was promoted to freight traffic manager of the Nickel Plate on January 16, 1927.

**Pierre O. Wood,** assistant superintendent of motive power of the St. Louis-San Francisco, with headquarters at Springfield, Mo., died in that city on February 20 at the age of 53 years. Mr. Wood, who was a native of Memphis, Tenn., had been connected with the Frisco for 36 years. He entered railway service on that road as a machinist apprentice at Memphis in 1893, advancing to machinist eight years later. For five months during 1903, he served as a fireman on the Illinois Central, then returning to the Frisco as an air brake machinist. From 1904 to 1913 Mr. Wood served successively as a fireman on the Southern division, as an engineman and as a traveling engineer. In 1913 he was promoted to assistant superintendent of locomotive performance at Springfield, then being further promoted to superintendent of locomotive performance, with headquarters at the same point, in 1914. Two years later he was advanced to assistant general superintendent of motive power at Springfield, where he remained until federal control of the railroads, when he was appointed superintendent of the Southern division, with headquarters at Memphis. Mr. Wood had been assistant superintendent of motive power continuously since March 1, 1920.

**Samuel George Strickland,** former general manager of the Chicago & North Western, who died at Marine, Minn., on February 19, had completed 43 years of railway service when he retired in 1920. He was born on August 15, 1859, and obtained his early education in grammer schools and a collegiate institute at Port Hope, Ont., and Peterboro. Mr. Strickland entered railway service in 1877 as a telegraph operator on the Canadian Pacific, the following year being engaged in a similar position and as a clerk on the St. Paul, Minneapolis & Manitoba (now the Great Northern). In 1880 he entered the service of the Chicago, St. Paul, Minneapolis & Omaha, as a telegrapher, later advancing through the positions of clerk, agent, genreal agent, agent and superintendent of terminals at St. Paul, Minn., chief clerk to the general superintendent, trainmaster, assistant superintendent at St. James, Minn., superintendent at Omaha, Neb., and general superintendent at St. Paul. Mr. Strickland was appointed assistant general superintendent of the North Western at Chicago in 1908, being promoted to general superintendent in 1910 and to assistant general manager in 1912. From 1914 to the beginning of federal control he served as general manager of the North Western, then acting as federal manager of that road for the United States Railroad Administration until its return to private operation on March 1, 1920.